1. Approval of Minutes of February 18, 2011 

2. Announcements: 
   a. Chair of the Graduate Council 
   b. CCGA Representative 
   c. Graduate Student Council Representative 
   d. Dean of the Graduate Division 

3. Courses and Programs Subcommittee 
   
   a. Courses 
   
   b. Programs 
      1. Exception Request for Thesis Committees in Low Residency MFA 
      2. MS Degree in Computer Engineering 
      3. Online Master of Science in Engineering Degree Pgm 

4. Graduate Program Review Subcommittee 
   a. Status Report 
   b. Graduate Program Reviews for 2011-12 

5. Fellowship Subcommittee Report 

6. Old Business 

7. New Business 
   Early Career Chair in Urban Entomology and Winston Chung Endowed Term 
   Professorship in Energy Innovation and the Winston Chung Endowed Term 
   Professorship in Sustainability 
   Discontinuances 

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Pages 8
Pages 9 – 33
Pages 34 - 60
Pages 61 - 63
Pages 64 -93
Pages 94 - 98
Present:

Morris Maduro, Chair
Kenneth Barish
Mohsen El Hafsi
Gloria Gonzalez-Rivera
Iryna M. Ethell
Paul E. Green
A. Jaworska
John N. Medearis
Connie Nugent
M. Vanderwood
J. W. Childers, ex officio
Arash Arami (Graduate Student Representative)
Jennifer Wright (Graduate Student Representative)

Absent:

Yingbo Hua
Nosung V. Myung
J.N. Medearis
Deborah Wong
Shizhong Xu

Approval of Minutes
The minutes of the meeting of the January 14, 2011 were approved with no changes.

Announcements:
Chair of the Graduate Council:

The following announcements were made by the Chair of Council:

Prof. Janet Arey resigned from the Committee due to illness and has been replaced by Prof. Daniel Gallie, Biochemistry. Sellyna Ehlers, who replaced Sue Stracener, was away on jury duty and Cindy Palmer was sitting in. Chair Maduro indicated that the Graduate Council
has so far conducted three Graduate Program Reviews (2 external and 1 internal). The reviews were a success so far, and the next three are scheduled to come up. Chair Maduro thanked the Committee members for their participation in the review process especially as that is what the main function of the Graduate Council is.

Secondly, Chair Maduro mentioned that at the last Council meeting, Council members had agreed to draft a letter to send to the Chancellor to request that the Graduate education mission of the University must be protected. Chair Maduro indicated that he has written a draft and he will send this round to the members before submission to the Chancellor and the Executive Vice Chancellor and Provost. Chair Maduro also mentioned that the Executive Council has been discussing budget cut priorities which will then be sent to the Chancellor. He mentioned how difficult it has been even for the Executive Council members to come up with specific issues that should be cut. He also discussed the project currently under discussion by the Committee on Library to move books from the Rivera to the Library.

Chair Maduro also mentioned that he will not continue as Chair of Graduate Council Chair next year, but that Prof. Ken Barish has been asked to serve as the 2010-11 Chair and that he (Maduro) will serve as Vice Chair and will help when Prof. Barish is not available. He also asked the Council members to consider volunteering to be the CCGA Representative citing the values of attending the CCGA meeting.

**CCGA Representative**

Chair Maduro indicated that there were a lot of self-supporting programs coming in to CCGA for review. He indicated that there will be need to ensure that regular Ph.D. programs do not suffer and also to ensure that they are indeed self-supporting and not draining resources from existing programs. Self supporting programs will not be sent for external review.
Chair Maduro mentioned that there was talk of creating a short term lower cost teaching position for newly graduated Ph.D. students – which is a less expensive way for fulfilling some of our teaching missions.

Also discussed were ways of engaging junior faculty in Graduate Council discussions as a way of getting them interested in serving at the appropriate time.

**Graduate Student Council Representatives:**
The GSA representative mentioned that UC Student Association (UCSA) is in the process of drafting the Bill of Rights and Responsibilities. It will not be UCR specific.

**Dean of the Graduate Division**
Dean Childers indicated that he thought the idea of a Bill of Rights and Responsibilities was an important one and applauded UCSA for taking on the task.

1. **Systemwide GSHIP (Graduate Student Health Insurance Premium)** – Goal is to create one unit that can be covered and include both graduate and undergraduates and the argument is that it will provide better coverage at a lower cost. One of the big reasons UCR declined was that there was no guarantee on what the increase in rate would be. UCR keeps its rate at 6% per year. Dean Childers indicated that UCR is considering joining and he will recommend that GSA think about it carefully as it is a saving.

2. **WASC** – Graduate Division will be sending out templates and suggestions on ways of translating what is already being done into the kinds of things that WASC wants to see in terms of learning outcomes.

3. Dean Childers discussed at length the budget issues facing the graduate programs. He indicated that there were still no specific details on what the amount or percentage will be. He also mentioned that the Graduate Division also got a cut ~ $900,000 less in real dollars between his first year and this year. In terms of actual spending capacity, i.e. the money given as stipend, it is effectively $2.25 million less
based on a cohort size of 550 students. Part of this is because NRT was cut last year. He mentioned the suggestion he made at the Cabinet meeting about reducing the number of graduate students we take in for two or three years but maintaining the level of support. He indicated that as he works on the budget scenarios, he will be discussing these ideas with the Graduate Council.

Courses and Programs Subcommittee:
Chair Gloria Gonzalez-Rivera mentioned that 11 courses were approved by the Graduate Council. These were: BIEN 264, CS217, DNCE 280, EE217, MGT 278C, MGT 295F, MGT 295G, MSE221, MSE 222L, MSE 223L, MSE 2451

The following programs were approved unanimously:

- Creative Writing Program Change
- Bylaws for Microbiology
- Proposal for a Designated Emphasis in "Middle East and Islamic Studies"
- Proposal for a Designated Emphasis in Book, Archive and Manuscript Studies
- Philosophy Request to accept fall only admissions – approved with 1 abstention.
- Proposed change in admission test requirements for admission to SoBA graduate programs. It was agreed that SoBA would provide Graduate Division with the GRE/GMAT conversion table.

It was agreed that Dean Childers will send out an announcement to the campus announcing the two designated emphasis.

Graduate Program Review Subcommittee:
The Status Report was reviewed – Coming up was the Southeast Asian Studies (Internal Review) scheduled for March 7, 2011 as well as the Neuroscience review which is also internal.

The Hispanic Studies review was scheduled for April 11 and 12.
The Bylaws for Sociology have been received. The bylaws were referenced as part of an appendix in the letter from the Sociology Chair. The Chair of the Review Subcommittee A indicated that he had read the bylaws and that he saw no problem with it. Chair Maduro indicated that he will work with Chair Green to review the bylaws to ensure that it adheres to the External review report.

**Fellowship Subcommittee Report:**

The Graduate Council’s Fellowship Subcommittee met on Monday, February 7, 2011 to review the Winter 2011 competition of Dissertation and Master’s Thesis Research Grants. Nineteen Dissertation Research grants were submitted. Fifteen proposals were partially funded, and four proposals were denied.

The total requests amounted to $17,260.22. The total awards given amounted to $9,000.00.

**Old Business:**

There was no old business to report.

**New Business:**

**Amrik Singh Poonian Endowed Term Chair in Computer Science** - The Graduate Council considered the request for approval of the Amrik Singh Poonian Endowed Term Chair in Computer Science and approved the request. However, Council wanted to draw attention to the letter from Chancellor Tim White to Duane Roberts, elected member of the UCR Foundation Board of Trustees. In his letter Dr. White thanked Roberts for his taking time to discuss the aforementioned Endowed Term Chair and for contributing his “precious resources in support of [UCR's] research, teaching and service mission.” It is of course appropriate to thank a contributor for such a generous donation. However, toward the end of the letter Dr. White mentions moving forward with a plan to have Casey’s Cupcakes [sic] prepared and delivered to UCR. Mr. Roberts is co-owner (with his wife and daughter) of the Casey’s Cupcakes bakery¹. While it may have been convenient for Dr. White to discuss this additional business in the letter, it left an impression of *quid pro quo*.
Request to Change length of final exams to 2 hours – The Graduate Council considered the request to change the length of final exams at UCR to 2 hours from 3 hours. After some discussions, the GC members were unable to endorse this proposal for many reasons.

1. The proposal seemed to have been drafted primarily because of a need to improve scheduling, and not for any pedagogical concerns. Several Graduate Council members noted that in their exams with undergraduates and graduate students alike, test takers have often needed even more time beyond the three hours.
2. In essay exams, shorter times penalize those who write slower or need extra time to articulate their thoughts. Alternatively, a shorter exam would force instructors to abandon longer essays altogether, which will affect the effectiveness of assessments.
3. Currently instructors are free to schedule shorter exams within the existing 3-hour timetable. Changing to a 2-hour block timetable would necessitate finding rooms that are free for two sequential blocks to accommodate a 3-hour final should one be needed. This may be difficult to achieve with fewer days being used to schedule all of the finals overall, compounded with the limited availability of rooms on campus (especially for large classes).
4. It may be more likely that students will have three or more exams in one day, necessitating further ad hoc exam scheduling, which consumes faculty time and is less fair to students who took an exam when it was scheduled.

Request to change iEval to add the word “demonstrations’ to Q18 - The Graduate Council considered the request to add the word “demonstrations” to question 18 of iEval and unanimously approved the request.

Meeting adjourned at 3:25 PM.
Ken Barish, Secretary
To: Graduate Council

From: Tod Goldberg, Administrative Director, Palm Desert MFA

Re: Exception Request For Thesis Committees in Low Residency MFA

Date: February 18, 2011

The unique nature of the Creative Writing and Writing for the Performing Arts Low Residency MFA program has issues in regards to thesis committee structure in that most of our professors are not ladder rank faculty. The program is considered “part time” employment for our professors – each is hired at 50% time, and ladder rank faculty teach on overload. We moved our core faculty into the Adjunct Series on long term contracts beginning with the 2010-2011 academic year. Each case was processed in accordance with Academic Personnel Policies and Procedures and voted on by the members of the full faculty in the Departments of Creative Writing and Theatre. In addition to these Adjunct faculty we hire several Visiting Assistant Professors each year – again, these professors are on long term contracts – and are also approved by the full faculty in the Departments of Creative Writing and Theatre.

Each of our professors is well respected, widely published (or produced, in the case of the screenwriters) and in the case of our core Adjunct faculty, has taught at UCR-Palm Desert for at least three years. They have proctored countless thesis projects over their careers, both in their employ here and at other universities, particularly as many of our faculty hold positions at other institutions. Our focus is on publication and as a result over 50% of our students publish or produce during their time in the program or directly upon graduation. In light of this, I propose the following:

Low Residency Thesis committees will consist of one Senate faculty member from the Departments of Creative Writing or Theatre [voted on and approved by Creative Writing and Theatre full faculty in June 2010] and two Low Residency Adjunct faculty members or on rare occasion one Low Residency Adjunct faculty member and one non-Senate faculty member (ie: Visiting Assistant Professor) by petition.

We feel this structure provides students with the best possible thesis advisement as well as promotes future publication and success. We appreciate your consideration of our proposal.
A Proposal for a

MASTER OF SCIENCE DEGREE IN COMPUTER ENGINEERING

Marlan and Rosemary Bourns College of Engineering University of California – Riverside
Riverside, CA 92521

REVISED
November, 2010

Submitted by
Walid A. Najjar, Director, Computer Engineering Program
Professor, Department of Computer Science & Engineering
Proposal for M.S. Degree in Computer Engineering

Proposal prepared by the Computer Engineering Committee:

Walid Najjar, CEN Director, Department of Computer Science & Engineering
Sheldon Tan, CEN Associate Director, Department of Electrical Engineering
Frank Vahid, Department of Computer Science & Engineering
Albert Wang, Department of Electrical Engineering

M.S. CEN Approvals

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<tr>
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<td>March 7, 2011</td>
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<td>March 8, 2011</td>
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</table>
Proposal for M.S. Degree in Computer Engineering

Contact Information:

Professor Walid A. Najjar

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SECTION I: INTRODUCTION

1. Introduction to Computer Engineering

This document is a proposal for a Master of Science (M.S.) degree in Computer Engineering. Computer Engineering at UCR is an interdepartmental program jointly managed by the Electrical Engineering and Computer Science and Engineering departments within the Bourns College of Engineering. Degree requirements as well as the administration of this program are described herein.

The specific focus of Computer Engineering (CEN) is on the design and construction of computing structures, both software and hardware.

CEN has been a distinct discipline for over 30 years. In most universities it is managed within the Computer Science or Electrical Engineering departments or jointly, as is the case at UCR. Some universities, such as UC Santa Cruz, have a separate Department of Computer Engineering within the College of Engineering.

At UCR, the B.S. degree in Computer Engineering is a popular degree in the Bourns College of Engineering. Undergraduate CEN enrollment for 2009 is 210, which accounts for ~16% of the total enrollment in BCOE. Recently, BCOE has established several five-year BS/MS programs and desires to offer one in CEN as well. Currently; there are nine faculty members in the Departments of Electrical Engineering and Computer Science and Engineering whose areas of research fit squarely within Computer Engineering.

The proposed degree will rely on the faculty members and resources already available in the EE and CSE departments. It will primarily admit students with undergraduate degrees in CEN, CS or EE, as well as students with other undergraduate majors who have the necessary pre-requisite courses.

2. Definitions and Program Objectives

Computer Engineering (CEN) is concerned with the design, programming and use of computing structures, large and small.

Computer engineering is a discipline that embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. Computer engineering has traditionally been viewed as a combination of both computer science (CS) and electrical engineering (EE). [IEEE/ACM Curriculum Guidelines for Undergraduate Degree Programs in Computer Engineering, 2004]

Computer engineers have training in electronic engineering, software design and hardware-software integration. They are involved in many aspects of computing, from the design of individual microprocessors, personal computers, and supercomputers, to circuit design. This field of engineering not only focuses on how computer systems themselves work, but also how they integrate into the larger picture of the specific application.

This major has seen and continues to see a very healthy growth in employment. The Bureau of Labor Statistics (BLS) ranks this profession as one of the fastest growing employment opportunities. The objective of the M.S. CEN is to offer more opportunities and access for students to this training at the graduate level.

3. Facilities and Resources

The proposed degree program will leverage the facilities existing in the Departments of Electrical Engineering and Computer Science and Engineering. The faculty affiliated with this program will
Proposal for M.S. Degree in Computer Engineering

be primarily these departments. The course program relies on courses already being offered in these two departments. Future course offerings will be made through these two departments.

4. Justification of the M.S. CEN Program

Computers have and continue to penetrate every aspect of life. As an example: 10 years ago, having a few microcomputers in a luxury car was a novelty. Now, low-end cars have dozens of microcomputers.


“Significant Points:

- Computer software engineers are one of the occupations projected to grow the fastest and add the most new jobs over the 2006-16 decade.
- Excellent job prospects are expected for applicants with at least bachelor’s degree in computer engineering or computer science and with practical work experience.
- Computer software engineers must continually strive to acquire new skills in conjunction with the rapid changes that occur in computer technology”.

In its summary, the BLS document stresses the need for advanced degrees and for continuous education in this area.

The master’s degree has been increasing in popularity. The number of degrees awarded in the U.S. has increased by 43% from 1996 to 2006.1 One of the reasons stated for the increased popularity of the master’s degree is:

“Professional master’s degree programs combine advanced discipline-specific course work with workplace skills such as communications, critical thinking, time management, and analytical ability that are highly valued by employers in business, government, and non-profit organizations. All these skills are highly transferable as job changes and career moves occur.”

Furthermore, data from the National Research Council indicates that there is a strong financial motivation for pursuing a master’s degree in science and engineering (S&E).2

“...data from the National Science Foundation (NSF) reveal that median salaries of master’s degree recipients one to five years after the degree was conferred tend to be higher than those of doctorates. More importantly, salaries of master’s degree holders in science and engineering have grown faster over the past 10 years than salaries of baccalaureate or doctorate holders.”

According to the National Science Foundation there is substantial room for growth of the master’s degree in S&E disciplines. The table below shows the percentage of degrees awarded in 2006 in S&E3. The data show a potential pool of M.S. students 10 times larger than the current pool of doctoral students most of whom are US nationals or permanent residents.

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<thead>
<tr>
<th></th>
<th>All fields</th>
<th>S&amp;E</th>
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<tbody>
<tr>
<td>Bachelor’s</td>
<td>1,473,735</td>
<td>473,533</td>
<td>32.1%</td>
</tr>
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</table>

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1 Council of Graduate Schools, “Why Should I Get a Master’s Degree?”. This brochure is available at http://www.cgsnet.org/portals/0/pdf/Why_Should_I_Get_A_Masters_BW.pdf.
5. Enrollment Projections for the M.S. CEN at UCR

We project an enrollment that will progressively grow to reach levels comparable to those of M.S. students in Computer Science and Electrical Engineering respectively.

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment</td>
<td>6</td>
<td>12</td>
<td>25</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

6. Administration of the M.S. CEN

The Computer Engineering Program (CEN) and its associated faculty in BCOE will administer the MS CEN.

- CEN Program administration already exists for the CEN B.S. program. Administration for the CEN program is carried out by a Director and an Associate Director, nominated by the Dean from the CEN Faculty. This same administrative structure will oversee the CEN M.S. degree program.
- A CEN Program Committee will assist the Program Director and Associate Director in overseeing the B.S. and M.S. degree programs.
- The Computer Engineering Program Committee consists of the Program Director, Associate Director and two additional members selected by the Dean from the Computer Engineering Faculty.
- The Program Director nominates a Graduate Advisor and an Undergraduate Advisor for the CEN Program from among the CEN Faculty.
- The CEN Faculty is comprised of senatorial faculty members from both the Electrical Engineering and Computer Science and Engineering Departments whose research expertise is in Computer Engineering.
- New CEN faculty members are proposed by the CEN Committee and approved by majority vote by the CEN Faculty.

The current and founding Computer Engineering Faculty members are:

- Laxmi Bhuyan (CSE)
- Philip Brisk (CSE)
- Rajiv Gupta (CSE)
- Roger Lake (EE)
- Walid Najjar (CSE)
- Sheldon Tan (EE)
- Frank Vahid (CSE)
- Albert Wang (EE)

The current CEN Committee consists of:

- Walid Najjar - Director
- Sheldon Tan – Associate Director
- Frank Vahid - Member
- Albert Wang - Member
7. Plan for Evaluation of the M.S. CEN

As is the norm for all graduate programs at the UCR campus, an outside team of experts will evaluate the program once every six or seven years. Beginning with the second year the CEN Program Committee will initiate an internal review of the M.S. CEN Program.
8. Relationship to Other Programs in the UC System

The only UC campus that offers an M.S. in Computer Engineering is UC Santa Cruz, in the Department of Computer Engineering. Many other campuses offer an M.S. in Computer Science and Engineering or in Electrical and Computer Engineering.
SECTION II: PROGRAM

1. Admission Requirements and Undergraduate Preparation

A. Admission

All applicants to this program must have completed a Bachelor’s degree or its approved equivalent from an accredited institution and to have attained undergraduate record that satisfies the standards established by the Graduate Division and University Graduate Council. Applicants should have at least an undergraduate major in Computer Engineering, Computer Science, Electrical Engineering or a closely related field. Applicants who fail to meet this criterion may sometimes be admitted with course deficiencies. However, no more than three deficiencies will be allowed.

A student who is deficient in a competency area may be asked to complete the corresponding UCR course with a letter grade of at least B+, or to pass a challenge examination based on that course’s final exam with a grade of at least B+. All such remedial work should be completed with the first year of graduate study, and in all cases the deficiency(s) must be corrected BEFORE a student can enroll in any graduate course from the same specialty area.

All applicants must submit scores from the Graduate Record Exam, General Test (GRE). The GRE subject test in Computer Science or Electrical Engineering is recommended but not required. Applicants whose first language is not English are required to submit acceptable scores from the TEST of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) unless they have a degree from an institution where English is the exclusive language of instruction. Additionally each applicant must submit three letters of recommendation, at least two of which must be academic references. All other application requirements are specified in the graduate application.

B. Prerequisite Material

Competence in the areas defined by the following UCR courses is essential to graduate study in computer engineering:

`EE 100A, EE 100B, EE 110A, EE 110B, CS 153, CS 161, CS 161L, CS/EE 120A and CS/EE 120B.`

The complete catalogue description of these courses is presented in Section V.

A student who is deficient in any of these competency areas may be asked to complete the corresponding UCR course with a letter grade of at least B+, or to pass a challenge examination based on that course’s final exam with a grade of at least B+. All such remedial work should be completed within the first year of graduate study, and in all cases the deficiency must be corrected BEFORE a student can enroll in any graduate course from the same specialty area.

C. Course Requirements

Students must be in residence for one year and complete a minimum of 36 quarters units of graduate and upper division undergraduate courses in or related to the major subject area. Students who have completed similar courses elsewhere may petition for waiver of a required course or for substitution of an alternative course. For students interested in interdisciplinary research, individual study programs can be approved.

1. Core Requirement (12 units). Three courses from the list of core courses below, with no grade lower than B-.
2. **Technical Electives (12 units).** Three courses from the list of technical elective courses below.

3. **Colloquium (3 units).** Satisfactory completion of three quarters of CS 287 (Colloquium in Computer Science) or EE 259 (Colloquium in Electrical Engineering) in three distinct quarters.

4. **Capstone Experience** - All students must complete a capstone experience that synthesizes and integrates the knowledge and skills obtained throughout the master’s program, according to one of the following options. It is the responsibility of the student to find a faculty member willing to supervise the master’s project or thesis, to form the faculty examining committee, and to schedule the oral examination.

   a. **Thesis Option (Plan I).** A minimum of 36 quarter units of graduate and upper division undergraduate courses in or related to the major subject area are required. At least 24 of the 36 units must be in graduate courses taken at this University; of these 6 to 12 must be graduate research units (CS 290, CS 297, CS 299, EE 290, EE 297, EE 299). Students must submit a master’s thesis in accordance with the general requirements of the university. The thesis is original research work, and it should demonstrate the student’s ability to study a research area, identify an open problem and make a research contribution. The thesis must be presented to and approved by a committee of at least three faculty members.

   b. **Project Option (Plan II).** A minimum of 36 quarter units of graduate and upper division undergraduate courses in or related to the major subject area are required; of these at least 18 units must be in graduate courses taken at this University, of which none may be in graduate research (CS 299 or EE 299) for the thesis or dissertation. In addition, a student pursuing this option must include 4 to 8 units of graduate research (CS 290, CS 297, CS 299, EE 290, EE 297, EE 299). Students must complete a research project under the guidance of a faculty member. This project will require a written report and will be presented to a committee of at least two faculty members.

D. Core Courses

- CS 203A - Advanced Computer Architecture
- CS 220 - Synthesis of Digital Systems
- CS 201 - Compiler Construction OR CS 202 - Advanced Operating Systems
- EE 213 - Computer-Aided Electronic Circuit Simulation
- EE 221 - Radio-Frequency Integrated Circuit Design

E. Technical Elective Courses

Any core course not used to fulfill the core requirement can be used as a technical elective. Additional technical elective courses are:

- CS 203B. Advanced Computer Architecture
- CS 213. Parallel Processing Architectures
- CS 218. Design and Analysis of Algorithms
- CS 223. Reconfigurable Computing
- CS 255. Computer Security
- CS 204. Advanced Computer Networks
- CS 257. Wireless Networks and Mobile Computing
- CS 246. Advanced Verification Techniques in Software Engineering
- CS 240. Network Routing
- CS 239. Performance Evaluation of Computer Networks
- EE 202. Fundamentals of Semiconductors and Nanostructures
- EE 203. Solid-State Devices
Proposal for M.S. Degree in Computer Engineering

- EE 210. Advanced Digital Signal Processing
- EE 211. Adaptive Signal Processing
- EE 222. Advanced Radio-Frequency Integrated Circuit Design
- EE 226. Wireless Communications
- EE 229. Video Processing and Communication
- EE 241. Advanced Digital Image Processing
- EE 243. Advanced Computer Vision
- EE 215. Stochastic Processes
- EE 235. Linear System Theory

The Computer Engineering Program Committee will, from time to time, update the list of Technical Elective Courses and propose the changes to the Computer Engineering Faculty for their approval by simple majority vote.
2. Sample Program for M.S. CEN Student

The following is a sample program for an M.S. CEN degree with the Thesis Option.

<table>
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<tr>
<th>Year in Program</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<tbody>
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<td></td>
<td>(4) CS 201 - Compiler Construction</td>
<td>(4) CS 223 - Reconfigurable Computing</td>
<td>(4) EE 203 - Solid-State Devices</td>
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<td></td>
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<td>(1) CS 287 – Colloquium in Computer Science</td>
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<td>Year 2</td>
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<td></td>
<td>(4) EE 202- Fundamentals of Semiconductors and Nanostructures</td>
<td>(4) CS 246 - Advanced Verification Techniques in Software Engineering</td>
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SECTION III: PROJECTED NEEDS

1. Student Demand for the Program
Student demand for the M.S. CEN degree program at UCR is evidenced by the large and growing enrollment in the Computer Engineering B.S. degree program.

2. Opportunities for Placement of Graduates
This topic has been extensively discussed in Section I.4 (page 6).

3. Relationship of the Program to Research and Professional Interests of Faculty
A number of faculty members in CSE and EE have research interests in Computer Engineering. However, the only graduate curricula currently available are the EE or CSE programs. The CEN program will provide a much better fit for the preparation of the students that they supervise.
SECTION IV: FACULTY AND STAFF

Nine faculty members in BCOE have research activities that fit within the scope of Computer Engineering. This number is likely to grow somehow as the CSE and EE Departments hire more faculty members in this area.

Dr. Laxmi Bhuyan
Professor, Department of Computer Science and Engineering
Ph.D. Computer Engineering, Wayne State University, 1982
Research Interests: Multiprocessor architecture; network processors; internet routers; web servers; parallel and distributed computing; performance evaluation.

Dr. Philip Brisk
Assistant Professor, Department of Computer Science and Engineering
Ph.D. Computer Science, University of California Los Angeles, 2006
Research Interests: Reconfigurable computing; application-specific and customizable processors; computer architecture; compilers

Dr. Rajiv Gupta
Professor, Department of Computer Science and Engineering
Ph.D. Computer Science, University of Pittsburgh, 1987
Research Interests: Compilers and architectures for embedded systems; software tools for profiling, slicing, and debugging; program analysis: static, dynamic, and profile-based.

Dr. Roger Lake
Professor, Department of Electrical Engineering
Ph.D. Electrical Engineering, Purdue University, 1992
Research Interests: Theory of electron transport through nanostructured, disordered and amorphous materials; modeling semiconductor devices from the atomistic, to the device, through the circuit level; theoretical and computational electronics and opto-electronics; ultra-scaled devices and device physics; high frequency and transient quantum device simulation; and novel materials, devices and architectures.

Dr. Walid Najjar
Professor, Department of Computer Science and Engineering
Ph.D. Computer Engineering, University of Southern California, 1988
Research Interests: Computer architecture and parallel computing; compilation and code optimizations for reconfigurable computing systems; novel platforms and programming paradigms for sensor networks; low power computer architectures.

Dr. Sheldon Tan
Associate Professor, Department of Electrical Engineering
Ph.D. Electrical & Computer Engineering, University of Iowa, 1999
Research Interests: Design automation for VLSI integrated circuits – high performance power/ground distribution network design and optimization, simulation and synthesis of mixed-signal/RF/analog circuits, embedded system design based on FPGA platforms and signal integrity issues in VLSI physical design (crosstalk analysis, substrate noise analysis and optimization).

Dr. Frank Vahid
Professor, Department of Computer Science and Engineering
Ph.D. Information and Computer Science, University of California Irvine, 1994
Research Interests: Embedded systems, FPGA-based computing
Dr. Albert Wang
Professor, Department of Electrical Engineering
Ph.D. Electrical and Computer Engineering, State University of New York, Buffalo, 1996
Research Interests: RF/Analog/Mixed-Signal Integrated Circuits (IC), Reliability & ESD (Electrostatic Discharge) Protection design for ICs, SoC (System-on-a-Chip), IC CAD and Modeling, Emerging Semiconductor and Nano Devices.
1. Prerequisite Courses

EE 100A. *Electronic Circuits* (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 001B. Electronic systems, linear circuits, operational amplifiers, diodes, nonlinear circuit applications, junction and metal-oxide-semiconductor field-effect transistors, bipolar junction transistors, MOS and bipolar digital circuits. Laboratory experiments are performed in the subject areas and SPICE simulation is used.

EE 100B. *Electronic Circuits* (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 100A. Differential and multistage amplifiers, output stages and power amplifiers, frequency response, feedback, analog integrated circuits, filters, tuned amplifiers, and oscillators. Laboratory experiments are performed in the subject areas and SPICE simulation is used.

EE 110A. *Signals and Systems* (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 010; EE 001B (may be taken concurrently); MATH 046. Basic signals and types of systems, linear time-invariant (LTI) systems, Fourier analysis, frequency response, and Laplace transforms for LTI systems. Laboratory experiments with signals, transforms, harmonic generation, linear digital filtering, and sampling/aliasing.

EE 110B. *Signals and Systems* (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): EE 110A. Fourier analysis for discrete-time signals and systems, filtering, modulation, sampling and interpolation, z-transforms. Laboratory experiments with signals, transforms, harmonic generation, linear digital filtering, and sampling/aliasing.

CS 153. *Design of Operating Systems* (4) Lecture, 3 hours; laboratory, 3 hours. Prerequisite(s): CS 061, CS 100, CS 111, C++ programming proficiency. Covers the principles and practice of operating system design. Includes concurrency, memory management, file systems, protection, security, command languages, scheduling, and system performance.

CS 120A. *Logic Design* (5) Lecture, 3 hours; laboratory, 6 hours. Prerequisite(s): CS 061 with a grade of "C-" or better. Covers the design of digital systems. Topics include Boolean algebra; combinational and sequential logic design; design and use of arithmetic-logic units, carry-lookahead adders, multiplexors, decoders, comparators, multipliers, flip-flops, registers, and simple memories; state-machine design; and basic register-transfer level design. Interdisciplinary laboratories involve use of hardware description languages, synthesis tools, programmable logic, and significant hardware prototyping. Cross-listed with EE 120A.

CS 120B. *Introduction to Embedded Systems* (5) Lecture, 3 hours; laboratory, 6 hours. Prerequisite(s): CS 120A/EE 120A. Introduction to hardware and software design of digital computing systems embedded in electronic devices (such as digital cameras or portable video games). Topics include embedded processor programming, custom processor design, standard peripherals, memories, interfacing, and hardware/software tradeoffs. Interdisciplinary laboratory involves use of synthesis tools, programmable logic, and microcontrollers and development of working embedded systems. Cross-listed with EE 120B.

CS 161. *Design and Architecture of Computer Systems* (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 120B/EE 120B; concurrent enrollment in CS 161L. A study of the fundamentals of computer design. Topics include the performance evaluation of microprocessors, instruction set design and measurements of use, microprocessor implementation techniques including multicycle and pipelined implementations, computer arithmetic, memory hierarchy, and input/output (I/O) systems.
CS 161L. Laboratory in Design and Architecture of Computer Systems (2) Lecture, 1 hour; laboratory, 3 hours. Prerequisite(s): CS 120B/EE 120B; concurrent enrollment in CS 161. Students design and simulate a complete computer system, using hardware description language and simulator. Topics include instruction set architecture design, assemblers, data-path and control unit design, arithmetic and logic unit, memory and input/output (I/O) systems, and integration of all parts into a working computer system.

2. Core Courses

- CS 203A - Advanced Computer Architecture
- CS 220 - Synthesis of Digital Systems
- CS 201 - Compiler Construction OR CS 202 - Advanced Operating Systems
- EE 213 - Computer-Aided Electronic Circuit Simulation
- EE 221 - Radio-Frequency Integrated Circuit Design

CS 201. Compiler Construction (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 152. Covers theory of parsing and translation. Also addresses compiler construction, including lexical analysis, syntax analysis, code generation, and optimization. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.

CS 202. Advanced Operating Systems (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 153. Examines recent developments in operating systems. Also covers multiprogramming, parallel programming, time sharing, scheduling and resource allocation, and selected topics. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.

CS 203A. Advanced Computer Architecture (4) Lecture, 3 hours; research, 3 hours. Prerequisite(s): CS 161. Covers contemporary computer systems architecture, including stack computers, parallel computers, pipeline processing, database machines, and multi-processor architecture. Includes evaluation of computer performance. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.

CS 220. Synthesis of Digital Systems (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141, CS 161. Covers the synthesis and simulation of digital systems. Topics include synthesis at the system, behavioral, register-transfer, and logic levels; application-specific processors; simulation; and emerging system-on-a-chip design methodologies. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.

EE 213. Computer-Aided Electronic Circuit Simulation (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 001A, EE 001B, EE 133. Introduction to numerical algorithms and computer-aided techniques for the simulation of electronic circuits. Covers theoretical and practical aspects of important analyses. Topics include circuit formulation methods; large-signal nonlinear direct current, small-signal alternating current, and moment-matching transient; sensitivity; and noise. Also discusses recent advances in timing analysis, symbolic analysis, and radio frequency circuit analysis.

EE 221. Radio-Frequency Integrated Circuit Design (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 100B; senior or graduate standing. Covers the essentials of contemporary radio frequency (RF) complimentary metal oxide semiconductor (CMOS) integrated circuit (IC) analysis and design. Addresses typical RF building blocks in CMOS and bipolar/CMOS (BiCMOS) technologies, including passive IC components, transistors, distributed networks, voltage reference and biasing circuits, power amplifiers, and feedback networks. Also covers RF device modeling, bandwidth estimation, and stability analysis techniques.
3. Technical Elective Courses

- CS 203B. Advanced Computer Architecture
- CS 213. Parallel Processing Architectures
- CS 218. Design and Analysis of Algorithms
- CS 223. Reconfigurable Computing
- CS 255. Computer Security
- CS 204. Advanced Computer Networks
- CS 257. Wireless Networks and Mobile Computing
- CS 246. Advanced Verification Techniques in Software Engineering
- CS 240. Network Routing
- CS 239. Performance Evaluation of Computer Networks
- EE 202. Fundamentals of Semiconductors and Nanostructures
- EE 203. Solid-State Devices
- EE 210. Advanced Digital Signal Processing
- EE 211. Adaptive Signal Processing
- EE 222. Advanced Radio-Frequency Integrated Circuit Design
- EE 226. Wireless Communications
- EE 229. Video Processing and Communication
- EE 241. Advanced Digital Image Processing
- EE 243. Advanced Computer Vision
- EE 215. Stochastic Processes
- EE 235. Linear System Theory
- CS 204. Advanced Computer Networks
- CS 213. Parallel Processing Architectures
- CS 218. Design and Analysis of Algorithms
- CS 223. Reconfigurable Computing
- CS 255. Computer Security
- CS 204. Advanced Computer Networks
- CS 257. Wireless Networks and Mobile Computing
- CS 246. Advanced Verification Techniques in Software Engineering
- CS 240. Network Routing
- CS 239. Performance Evaluation of Computer Networks
- EE 202. Fundamentals of Semiconductors and Nanostructures
- EE 203. Solid-State Devices
- EE 210. Advanced Digital Signal Processing
- EE 211. Adaptive Signal Processing
- EE 222. Advanced Radio-Frequency Integrated Circuit Design
- EE 226. Wireless Communications
- EE 229. Video Processing and Communication
- EE 241. Advanced Digital Image Processing
- EE 243. Advanced Computer Vision
- EE 215. Stochastic Processes
- EE 235. Linear System Theory

CS 203B. *Advanced Computer Architecture* (4) Lecture, 3 hours; research, 3 hours. Prerequisite(s): CS 203A with a grade of "B" or better. Covers advanced topics in general-purpose computer architecture including instruction-level parallel architectures, as well as very-long-instruction-word, explicitly parallel instruction computing, and multithreaded architectures. Also covers dataflow machines and vector and single instruction multiple data architectures, including multimedia extensions. Also examines network processors, multimedia processors, and advanced embedded processors. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.

CS 204. *Advanced Computer Networks* (4) Lecture, 3 hours; consultation, 1 hour. Prerequisite(s): CS 014, CS 164. Covers advanced topics in computer networks, layering, Integrated Services Digital Networks (ISDN), and high-speed networks. Also covers performance models and analysis, distributed systems and databases, and case studies. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.

CS 213. *Parallel Processing Architectures* (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 161 or CS 203A. A study of parallel processing. Covers static and dynamic interconnection networks; shared memory multiprocessors; and cache coherence and synchronization. Also examines pre-fetching; memory management; message-passing architectures; work-station clusters; scheduling and mapping algorithms; and load balancing in Web servers. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.

CS 218. *Design and Analysis of Algorithms* (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141. A study of efficient data structures and algorithms for solving problems from a variety of areas such as sorting, searching, selection, linear algebra, graph theory, and computational geometry. Also covers worst-case and average-case analysis using recurrence relations, generating functions, upper and lower bounds, and other methods. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.

CS 223. *Reconfigurable Computing* (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): CS 202 or CS 203A; consent of instructor. Covers reconfigurable computing, a novel computational model that is fast becoming part of the mainstream in high-performance computing. May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.
computing. Addresses architectures, software tools and compilers, programming models, and
applications. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and
graduate advisor.

CS 239. Performance Evaluation of Computer Networks (4) Lecture, 3 hours; outside research, 3
hours. Prerequisite(s): CS 164. Offers models and analytical techniques for evaluating
the performance of computer networks. Covers basic and intermediate queuing theory and queuing
networks and their application to practical systems. May be taken Satisfactory (S) or No Credit
(NC) by students advanced to candidacy for the Ph.D.

CS 240. Network Routing (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): CS 141
or CS 204; CS 164. An in-depth study of routing in computer net- works. Examines general
principles and specific routing protocols and technologies. Topics include Internet, Asynchronous
Transfer Mode (ATM), optical, wireless, and ad hoc networks. May be taken Satisfactory (S) or
No Credit (NC) by students advanced to candidacy for the Ph.D.

CS 246. Advanced Verification Techniques in Software Engineering (4) Lecture, 3 hours; outside
research, 3 hours. Prerequisite(s): CS 111/MATH 111, CS 141, CS 150, or equivalents or
consent of instructor. A study of advanced techniques to specify and examine the correctness of
complex systems and software. Focuses on concurrent and distributed behavior, for- mal
description languages, temporal logics, model checking and symbolic model checking, partial
order reduction, and the use of verification tools. May be taken Satisfactory (S) or No Credit (NC)
by students advanced to candidacy for the Ph.D.

CS 257. Wireless Networks and Mobile Computing (4) Lecture, 3 hours; outside research, 3
hours. Prerequisite(s): CS 141; CS 164 or CS 204. Introduces basic and advanced concepts of
wireless networks and mobile computing. Covers both wireless cellular and ad hoc networks.
Includes protocols for medium access control, resource allocation, and routing, as well as
transport layer optimizations for the wireless environment. Also covers standards, Bluetooth, and
the IEEE 802.11 for wireless local area networks. May be taken Satisfactory (S) or No Credit
(NC) by students advanced to candidacy for the Ph.D.

EE 202. Fundamentals of Semiconductors and Nanostructures (4) Lecture, 3 hours; outside
research, 3 hours. Prerequisite(s): EE 133, EE 201; or consent of instructor. Examines principles
of semiconductor materials and nanostructures. Topics include periodic structures, electron and
phonon transport, defects, optical properties, and radiative recombination. Also covers absorption
and emission of radiation in nanostructures, and nonlinear optics effects. Emphasizes properties
of semiconductor superlattices, quantum wells, wires, and dots.

EE 203. Solid-State Devices (4) Lecture, 3 hours; out- side research, 3 hours. Prerequisite(s): EE
133 or consent of instructor. Covers electronic devices including p-n junctions, field-effect
transistors, hetero- junction bipolar transistors, and nanostructure devices. Explores electrical and
optical properties of semiconductor heterostructures, superlattices, quantum wires and dots, as
well as devices based on these structures.

EE 210. Advanced Digital Signal Processing (4) Lecture, 3 hours; discussion, 1 hour.
Prerequisite(s): EE 110B, EE 141. Provides in-depth coverage of advanced techniques for digital
filter and power spectral estimation. Topics include digital filter design, discrete random signals,
finite-wordlength effects, nonparametric and parametric power spectrum estimation, multirate
digital signal processing, least square methods of digital filter design, and digital filter
applications.

EE 211. Adaptive Signal Processing (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE
210, EE 215, EE 236. Provides an in-depth understanding of adaptive signal processing
techniques. Covers Wold decomposition, Yule-Walker equations, spectrum estimation, Weiner
filters, linear prediction, Kalman filtering, time-varying system tracking, nonlinear adaptive filtering,
and performance analysis of adaptive algorithms and their variations including stochastic
gradient, least mean square, least squares, and recursive least squares.
Proposal for M.S. Degree in Computer Engineering

EE 215. *Stochastic Processes* (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): graduate standing or consent of instructor. A study of probability theory and stochastic processes, with a focus on the most fundamental aspect of modern communication, control, and signal processing systems driven by random signal inputs. Topics include random variables and stochastic processes; spectral analysis; Wiener optimum filter, matched filter, and Karhunen-Loève expansion; mean square estimation theory including smoothing, filtering, and linear prediction; Levinson’s algorithm, lattice filters, and Kalman filters; and the Markov process.

EE 222. *Advanced Radio-Frequency (RF) Integrated Circuit Design* (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 100B; senior or graduate standing. Covers analysis techniques for nonlinear effects and noise in RF integrated circuit design. Addresses nonlinear, and distortion behavior, including inter-modulation, cross-modulation, harmonics, gain compression, and desensitization. Also explores noise effects, including thermal, short, flicker, and burst noises. Includes single-stage and multiple-stage networks.

EE 226. *Wireless Communications* (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 215, EE 224. Presentation of fundamental cellular concepts and new techniques in wireless communications. Topics include cellular systems and standards, frequency reuse, system capacity, channel allocation, cellular radio propagation, fading channel modeling and equalization, spread spectrum communications and other multiple access techniques, and wireless networking.

EE 228. *Fundamentals of Data Compression* (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 215 (may be taken concurrently). Covers the fundamental theory and tools for designing data and signal compression systems. Topics include lossless coding, scalar quantization, predictive and transform coding techniques, vector quantization, and the general trade-off between the reproduction signal quality and the bit-rate of the digital representation. Provides a foundation for further study and research in speech, audio, image, and video compression.

EE 235. *Linear System Theory* (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): EE 132, MATH 113. Provides a review of linear algebra. Topics include the mathematical description of linear systems; the solution of state-space equations; controllability and observability; canonical and minimal realization; and state feedback, pole placement, observer design, and compensator design.

EE 241. *Advanced Digital Image Processing* (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 152 or consent of instructor. Covers advanced topics in digital image processing. Examines image sampling and quantization, image transforms, stochastic image models, image filtering and restoration, and image data compression.

EE 242. *Intelligent Systems* (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): graduate standing or consent of instructor. Introduces fundamental concepts of design of intelligent systems. Topics include biological versus computational systems, knowledge representation, computational reasoning, computational learning, language and human- machine communication, expert systems, computational vision, and examples of intelligent machines.

EE 243. *Advanced Computer Vision* (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): EE 146 or consent of instructor. A study of three-dimensional computer vision. Topics include projective geometry, modeling and calibrating cameras, representing geometric primitives and their uncertainty, stereo vision, motion analysis and tracking, interpolating and approximating three-dimensional data, and recognition of two-dimensional and three-dimensional objects.
SECTION VI: RESOURCE REQUIREMENTS

All the technical resources required by the M.S. CEN program are already available in and for the EE and CSE Departments including computing facilities, library resources, teaching laboratories and research facilities.

The only additional resources would be office space and one FTE for administrative support for the graduate and undergraduate programs in CEN.
SECTION VII: GRADUATE STUDENT SUPPORT

MS CEN students are expected to be self-supported. However, GSR and Teaching Assistantships may be available on a case-by-case basis.
SECTION VIII: GOVERNANCE

The governance of the M.S. CEN degree program is described in Section I.6 (page 7).
February 23, 2011

Letter of Support for the Proposal for the M.S. Degree in Computer Engineering

I strongly support the proposed M.S. Degree in Computer Engineering. The M.S. degree is valued highly in the engineering profession. This program is a product of the commitment by the faculty of the Computer Engineering Program to produce a highly trained work force in support of California’s information technology sector. The department, college, and the campus will benefit from the interactions developed from this effort.

I also would like to note that the undergraduate program in Computer Engineering is one of the two most popular in the Bourns College of Engineering. Some of these students would like to participate in our B.S./M.S. program. The joint bachelors and masters program allows our top students to receive both degrees in about five years. As such, the M.S. Degree in Computer Engineering is first step to the establishment of a B.S./M.S. program in Computer Engineering.

Thus, I am happy to commit to the projected $15,000 per year budget to cover the differential between graduate and undergraduate fees.

Sincerely,

Reza Abbaschian, Dean
Bourns College of Engineering
Title
Proposal to Establish a Self-Supporting, College-Wide, Online Master-of-Science in Engineering Degree Program within the Bourns College of Engineering

Date of Preparation
January 3, 2011

Contact Information Sheet (with the lead proponent clearly identified)

- Dean: Reza Abbaschian, Bourns College of Engineering (reza.abaschian@ucr.edu)
- Associate Dean: Mark Matsumoto, Bourns College of Engineering (mark.matsumoto@ucr.edu)
- Lead Proponent: Thomas Payne, Computer Science and Engineering (thomas.payne@ucr.edu)
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1 Introduction

1. Aims and objectives of the program. Any distinctive features of the program should also be noted.

The primary purpose of BCOE’s proposed Online Master-of-Science in Engineering Program is to enable fully employed engineers, including computer scientists, to advance their professional education, enhancing their value to their employers. The proposed program will be of benefit to engineers, their employers, this state, and the nation. It is at the Master’s level that engineers have the opportunity to learn a specialization in depth, and to renew and update their knowledge of technological advances.

This program is being developed for highly-qualified employed engineers who, for various reasons, do not or cannot attend traditional full-time M.S. programs and who are keenly interested in maintaining up-to-date knowledge of engineering and technology.

There are several reasons for the proposed online MS-degree program in Engineering:

- It furthers the mission of the University.
- It provides UCR in general and BCOE in particular with an entry to online education, which is certain to become a major mode of delivery for higher education in the 21st Century. A recent survey found that almost a third of UC and UC-eligible students had already taken at least one online course. The number for UCR is not available, but it is very likely to be below that number.
- It serves the needs of working professionals and serves the needs of the industrial community.
- It provides industrial contacts for faculty members to establish research collaborations.
- It provides support funds for PhD students.

The Size and Shape Working group of the University of California Commission on the Future states that:

The terminal Masters is slightly anomalous at UC, where graduate students who are not pursuing professional degrees are usually pursuing doctorates. **Self-supporting Master’s programs are beneficial both to the UC mission and to state economic needs.** [Emphasis added.]

Also, per President Yudof’s May 14, 2010 letter to the Regents:

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1http://sloanconsortium.org/publications/survey/class-differences
2http://ucfuture.universityofcalifornia.edu/sizeofuc.html
The University’s self-supporting programs extend the University’s degree programs to academically qualified working adults who cannot be full-time students, as well as to foreign-trained students, students located off campus, and students seeking instruction in niche fields.

The distinctive features of the proposed program are that:

(a) The Program will be self supporting.

(b) The Program will be college-wide. This structure enables efficient management at the college level and will facilitate the development of multi-disciplinary specializations.

(c) The Program will be delivered over the Internet. Students of the Program will receive all course materials, including lectures, in an “online” manner. The current mode of delivering many courses within the Bourns College of Engineering (BCOE) relies heavily upon information technology, using learning-management systems. That is, currently, BCOE students receive course lecture notes, assignments, announcements, and other items via WEB interfaces, and they participate in online forums for questions and answers with instructors and TAs. In addition, prepared lectures will be available online for the students of the online M.S. in Engineering Program. The full description of what is meant by “online lecture” is contained in Subsection 2.6.

(d) The Program’s requirements include a significant design experience, incorporating additional readings and the knowledge of the courses undertaken. The Program includes an online 296A course, Preparation for the Comprehensive Examination, which will address this engineering design experience — see Section 2.6.

(e) Program profits will mainly be used to support Ph.D. students within the BCOE.

(f) The design experience, the mode of delivery of the courses of instruction, the availability of this online M.S. in Engineering Program for employed engineers, and the ability to easily implement multidisciplinary programs of study are what distinguish this new program from the M.S. programs that BCOE departments currently offer.

2. **Historical development of the field and historical development of departmental strength in the field.**

This college-wide program will be based on existing areas of study and combinations thereof to establish relevant and attractive (possibly multidisciplinary) “specializations.” The material for each 100/200-level course

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3 Engineering 296A is a yet-to-be-proposed course similar to UCLA’s 597A, which is offered by each engineering department.
of the online M.S. in Engineering Program will be equivalent to the material delivered under the traditional MS/PhD program; the difference is the mode of delivery. Courses will be taught and administered by ladder-rank faculty and, at times, by selected adjunct faculty, emeriti, and lecturers. Program details are provided in Section 2.

Not all areas of study within the College will be candidates for this program and, as discussed in Section 2, the initial stage (the first year) will begin with Bioengineering as the initial specialization. At the beginning of the second year, the first year for the second cohort, the goal is to have in place at least one additional specialization. Generally, any set of approved courses that can effectively be delivered by online instruction is a candidate to be included in the online M.S. in Engineering Program. However, during the “initialization stage” and the subsequent year 2 and/or year 3, it is most likely that only a few specializations will be offered. Further specializations will be chosen according to faculty availability and advice from our industry advisers, their employees, and our alumni.

3. Timetable for development of the program, including enrollment projections. Consistency of these projections with the campus enrollment plan. If the campus has enrollment quotas for its programs, state which program(s) will have their enrollments reduced in order to accommodate the proposed program.

We hope to implement an initial offering by Fall 2011 or as soon feasible after approval. Before implementation, a number of tasks will need to be done including:

- Development of initial specialization curriculum.
- Approval of new graduate courses for the professional component of this degree program.
- Development of appropriate versions of these newly developed courses as well as the technical courses that will make up the initial specialization areas for online delivery.
- Sufficient potential enrollments in the initial specializations (~5 students).

As stated above, we plan to start the online M.S. in Engineering Program by offering a specialization in Bioengineering. Upon imminent approval of the online M.S. in Engineering Program by the Graduate Council and CCGA, we will solicit further advice from our industry partners and alumni with respect to specializations in the other BCOE departments and programs.

We will solicit the opinions of our alumni with respect to appropriate specializations, including suggested multidisciplinary areas. This will be

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4 Instructor compensation is discussed on page 22.
an on-going effort of BCOE. We will be in frequent contact with our industry partners for their opinions on appropriate specializations, with emphasis on emerging and future areas.

4. **Relation of the proposed program to existing programs on campus and to the Campus Academic Plan.** If the program is not in the Campus Academic Plan, why is it important that it be begun now? Evidence of high campus priority. Effect of the proposed program on undergraduate programs offered by the sponsoring department(s).

The online M.S. in Engineering Program will emphasize specializations. As an example, our initial specialization will be drawn from Bioengineering courses of the Bioengineering Department. As described in Section 2, the online M.S. in Engineering Program will consist of nine courses, including Engineering 296A to provide the appropriate instruction mechanism and course credit for the major design project. It is important to note that each 100/200 level course’s material in the online M.S. in Engineering Program is equivalent to the material delivered in the traditional MS/PhD program; the difference is the mode of delivery.

There will be no operational relationship between the online M.S. in Engineering Program and the traditional M.S. programs. In particular, the offerings of a given course will be distinct. Each course of the online M.S. in Engineering Program will be constituted as a separate section of the traditional course (e.g., CS235, Section 2). Only students of the online M.S. in Engineering Program will be allowed to enroll in this latter section, and similarly students of the online M.S. in Engineering Program will not be allowed to enroll in the traditional offering (e.g., CS235, Section 1). Additionally, while many traditional graduate courses are offered once per year, their online counterparts may be offered more often.

5. **Interrelationship of the program with other University of California institutions, if applicable.** The possibility of cooperation or competition with other programs within the University should be discussed. Proponents should send copies of their proposal to all departments on other campuses offering similar degrees. Review letters should be obtained from chairs of such departments and these letters should be attached to the proposal.

UCLA has an established self-supporting online “Master of Science in Engineering” program that is intended for employed engineers as well. Other UC campuses such as UCSD are also considering the establishment of similar programs.

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5 This course, described in subsection 2.4, is yet to be submitted for approval to the Committee on Courses and the Graduate Council.
Another local competitor for the proposed program is the Distance Education Network of USC, which offers M.S. degrees in the many engineering disciplines.

The Stanford Center for Professional Development (SCPD) offers online M.S. degrees, for employees of member companies, in several engineering disciplines (including Electrical Engineering, Mechanical Engineering, and Computer Science).

On the East Coast, the Georgia Institute of Technology offers online M.S. degrees in several engineering disciplines (including Electrical Engineering, Mechanical Engineering, and Civil Engineering).

We believe the strength of the faculty and the specializations that we will include in the online M.S. in Engineering program will lead to considerable demand for the education and training that BCOE has to offer.

As this program is to be a self-supporting, no resources, teaching or otherwise, will be withdrawn from the BCOE’s undergraduate or graduate programs.

**Precedents.** Within the UC System:

- UCLA proposed their Online MS in Engineering in 2004. It was established in 2007 and now has 450 students. Currently, UCLA’s is the UC System’s only online MS in Engineering.
- UCSD has proposed a Master of Advanced Studies in Systems Engineering, and that proposal has gone forward to the CCGA.
- UCB is proposing a one year, Master of Engineering program that is not online.

US News has published a list of 60 well respected universities that offer online degrees in engineering, both graduate and/or undergraduate.

Here are further examples of online M.S. degree programs in engineering offered by top-fifty engineering schools — specifically, US News ranks the University of Illinois–Urbana-Champaign as fifth, USC as seventh, UCLA as 14th, the University of Florida as 25th, Arizona State as 45th:

- USC’s Viterbi School of Engineering offers 66 M.S. degree programs in engineering of which 46 are available online.
- The EDGE (Electronic Delivery of Graduate Engineering) Program of the University of Florida offers 20 different MS degree programs within seven majors.

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8[http://mapp.usc.edu/mastersprograms/degreeprograms/index.html](http://mapp.usc.edu/mastersprograms/degreeprograms/index.html)
9[http://www.ufedge.ufl.edu/](http://www.ufedge.ufl.edu/)
– Computer and Information Science and Engineering
– Electrical and Computer Engineering
– Environmental Engineering Sciences
– Industrial & Systems Engineering
– Materials Science and Engineering
– Mechanical and Aerospace Engineering

Their most popular degree is in Environmental Engineering.

UF has been offering distance education since 1964. For 2009-2010, EDGE had approximately 1200 graduate course enrollments. Half of these students came from Florida, with the remainder distributed all over the U.S. and internationally.

• The University of Illinois–Urbana-Champaign offers an online M.S. degree in Mechanical Engineering.\textsuperscript{10}

• Arizona State University offers an online M.S. degree in Software Engineering.\textsuperscript{11}

6. Plan for evaluation of the program within the offering departments(s) and campus wide.

(a) At the end of each quarter, students will be asked, via online questionnaires, for their opinions of the effectiveness of the teaching medium, approach, and content. Since these graduate students are employed engineers, a good deal of valuable feedback is expected, and improvements will be made accordingly.

(b) During the initialization stage and the second year, the Dean and the Associate Dean will meet periodically with the faculty of the specializations. The head administrator of the computing facilities involved will also attend so that any problems associated with the physical resources needed for the delivery of online lectures may be discussed and resolved. Specifically sought will be the faculty opinion of the success of the online students relative to the traditional students.

(c) At the end of each two-year period, the Dean will request that the Faculty Executive Committee review the program and provide its recommendations to the Dean, who will forward those recommendation, as well as the Dean’s recommendations, to the Graduate Council to implement recommended changes.

(d) As with all graduate programs, the Graduate Council executes its reviews according to its schedule.

\textsuperscript{10}http://online.engineering.illinois.edu/degrees/mechanical.htm
\textsuperscript{11}http://www.earnmydegree.com/online-education/online-college/arizona-state-university.html
**Academic standards.** The assurance of academic standards for the proposed program is the track record of the proposing unit. In the 20 years of its existence, BCOE has established six graduate programs including the two largest PhD programs on the UCR campus. In addition:

- The students entering the program will meet the same admission standards as those entering the standard graduate programs.
- The courses for this program will be approved via UCR’s standard process.
- The program will be reviewed via UCR’s standard graduate-review process on the standard review cycle.
- The courses will be taught by UCR faculty who are reviewed via the standard processes.
- Some of the courses will be taught to live audiences of resident students and simultaneously recorded for online students. This technique has been successfully employed by other top universities, such as the University of Florida\(^\text{12}\).
- The program committee will monitor the annual BCOE alumni surveys to determine whether the program’s objectives are being met.
- There will be UCR’s standard course evaluations.
- All students’ exams will be proctored.
- Each student must either take a comprehensive examination prepared by a committee of BCOE faculty or complete an MS project under the supervision of a BCOE faculty member. In either case, there will be faculty feedback regarding the educational outcomes.
- Each course is taught under the auspices of an existing UCR department, which will have oversight responsibility for that course.

In addition, the proposed program has been modeled after a successful program at UCLA, and there are precedents for such programs at many other top universities throughout the country.

According to a 3/1/2010 report from UCOP, “Current state of online education in the US: Opportunities and challenges”\(^\text{13}\):

A systematic analysis conducted by the U.S. Department of Education of the research literature from 1996 through July 2008 identified more than a thousand empirical studies of online learning in K-12, post-secondary, and professional education. An analysis of the studies that:

- contrasted an online to a face-to-face condition,

\(^{12}\)http://www.ufedge.ufl.edu/programs/degree.php

\(^{13}\)http://groups.ischool.berkeley.edu/onlineeducation/docs/currentstate
measured student learning outcomes, employed rigorous research design, and provided adequate information to calculate an effect size, produced 51 independent effects (44 of which were based on research with students beyond K-12) that could be subjected to meta-analysis.

The meta-analysis found that, on average, students in online learning conditions performed better than those receiving face-to-face instruction. ... Online education will not ... dilute the integrity and quality of the host institution’s academic offerings whether delivered in person or online. And online courses need not require more faculty time than face-to-face instruction.

2 Program

A detailed statement of the requirements for the program including the following:

1. Undergraduate preparation for admission.

In addition to the requirements of the University, each applicant must possess the equivalent of a Bachelor’s degree in engineering, computer science, physical science, or mathematics, and have sufficient background, courses or experience, to satisfy the prerequisites for the courses of the corresponding specialization.

2. Foreign language. “The CCGA recognizes that foreign language competence may be an important element of graduate education of doctoral programs. It is the responsibility of the Divisional Graduate Councils to insure that the proponents of new doctoral programs have carefully considered the value of a foreign language requirement. We shall assume that when a proposal for a new doctoral degree has been forwarded to CCGA, this issue has been addressed and resolved to the satisfaction of the Division. Divisional Graduate Councils should apply the same standard adopted for new programs in reviewing existing doctoral programs” (CCGA Minutes, 5/14/85, p.6)

Not applicable.

3. Program of study:

(a) Specific fields of emphasis
Each area of study within each of BCOE’s traditional graduate programs is a candidate for a corresponding specialization of the online M.S. in Engineering Program, provided that the courses can be effectively delivered in an online fashion. Combinations of such areas will be actively sought in order to enhance multidisciplinary education. A distinct advantage of the College-wide M.S. in Engineering Program will be the ability to provide multidisciplinary education.

We will initiate the Program by offering the Bioengineering specialization. At the beginning of the second year, we intend to introduce at least one more new area-of study, to be selected early in the first year upon the advice of faculty, industry, and alumni. Two likely possibilities include Water-Quality Control Systems and Computer Networks.

As a result of our on-going advice from our industry partners, as well as from our alumni, new specializations will be added to the Program.

(b) Plan(s): Masters I and/or II; Doctors A or B

The online M.S. in Engineering Program will be structured in a manner that will allow employed engineers to complete the requirements in two academic years plus one additional summer quarter. All students will complete their requirements through Plan II (project or comprehensive exam). The project will involve a literature review of a specialization topic, a substantial engineering-design project, and a report based on those readings as well as upon course work.

(c) Unit requirements

The program will consist of nine courses (36 units), six of which must be at the 200 level. Each student’s program will contain at least four core courses from the professional engineering series, four more from the student’s chosen specialization, plus ENGR 296A (Preparation for M.S. Comprehensive Examination). The latter provides the opportunity for adequate study and instruction for the major design project, a key component of the online M.S. in Engineering Program.

(d) Required and recommended courses, including teaching requirement

See the sample program below (item # 11) for the course requirements for the initial specialization, Bioengineering.

(e) When a degree program must have licensing or certification, the requirements of the agency or agencies involved should be listed in the proposal, especially the courses needed to satisfy such requirements (CCGA Minutes, 1/17/78, p.5)

Not applicable.

14See Subsection 4 for more details.
4. **Field examinations — written and/or oral.**
   Not applicable.

5. **Qualifying examinations — written and/or oral.**
   Not applicable.

6. **Thesis and/or dissertation.**
   Not applicable.

7. **Final examination.**
   Not applicable.

8. **Explanation of special requirements over and above Graduate Division minimum requirements.**
   Not applicable.

9. **Relationship of master’s and doctor’s programs.**
   An on-going student of a traditional M.S. program may not switch to the online M.S. in Engineering program. Students who have completed the online M.S. in Engineering program may apply to the Ph.D. program. Students who have completed a traditional M.S. or Ph.D. programs may be admitted to the online M.S. in Engineering program; however, courses taken in completion of those programs’ requirements may not be used for the online M.S. in Engineering program.

10. **Special preparation for careers in teaching.**
    Not applicable, since the students will be practicing engineers.

11. **Sample program.**
    A specialization associated with the online M.S. in Engineering Program will be constructed from areas of study associated with the traditional M.S. programs. As an example, we consider the Bioengineering specialization.

    **Specializations**

    **Bioengineering**
    Principles and applications of Bioengineering based on a solid fundamental foundation in biological science and engineering to equip the students with diverse communication skills and training in the most advanced quantitative bioengineering research so that they can become leaders in their respective fields. The result is a rigorous, but exceptionally interactive and welcoming educational training for Bioengineering graduate students.
Prerequisite. B.S. degree in engineering or equivalent.

Minimum Course Requirements. Nine four-unit courses, of which at least six must be graduate courses, i.e., at the 200 level.

Plan II. Engineering 296A; four courses from the professional engineering core; plus four courses from the following list, subject to the approval of the student’s adviser:

- BIEN 223 – Engineering Analysis of Physiological Systems
- BIEN 224 – Cellular and Molecular Engineering
- BIEN 249 – Integration of Computational and Experimental Biology
- BIEN 264 – Dynamics of Biological Systems

Selection of courses for the professional engineering core will include courses such as the following:

- MGT 201 Quantative Analysis
- MGT 221 Decision Making Under Uncertainty
- MGT 236 Decision Making Under Certainty
- MGT 230 Databases for Management
- MGT 243 Product Development
- MGT 266 Project Management
- MGT 281 Systems Analysis and Design
- XRC 463.1 Systems Requirements Definition and Analysis Egr.
- XRC 463.2 Systems Concepts Development and Selection Egr.
- XRC 463.3 Systems Design and Integration Egr.
- XRC 463.4 Systems Verification Egr.
- XRC 470.37 New Product Development
- XRC 470.41 Project Management Essentials (an online course)

A sample specialization, drawn from Bioengineering follows:

- BIEN 223
- BIEN 224
- BIEN 249

15 Online versions of these courses have been neither developed nor proposed for Academic Senate approval. Nor have the X 463 series and X 470 series been proposed for XRC status. Online version will be developed as needed, except that X 470.41 is already an online course that has been delivered multiple times by UNEX.

16 Online versions of these courses have been neither been developed nor proposed for Academic Senate approval at this time.
BIEN 264

The comprehensive-examination requirement will be met by a literature review, a major design project, plus a report; one enrollment in Engineering 296A[17] will provide the appropriate course credit and instruction vehicle for this requirement.

ENGR 296A. Preparation for M.S. Comprehensive Examination. (4 units) Tutorial, to be arranged. Limited to graduate engineering students in the online M.S. program. Reading and preparation for M.S. comprehensive examination. S/U grading.

We believe that ENGR 296A requirement will benefit employed engineers far more than only lectures, the mode of operation of other online engineering programs. We believe that the design project and the concomitant satisfaction upon its completion will attract online M.S. in Engineering students to our Ph.D. programs.

12. Normative time from matriculation to degree. (Assume student has no deficiencies and is full-time.) Also specify the normative lengths of time for pre-candidacy and for candidacy periods. (If normative time is subsequently lengthened to more that six years, prior approval of CCGA is required.) Other incentives to support expeditious times-to-degree: what policies or other incentives will assure that students make timely progress toward degree completion in the proposed program?

The normative time for completion will be two calendar years.

3 Projected need

A statement setting forth the following:

1. Student demand for the program.

The demand for such a program is high. UCLA’s program started in 2007 and last year had 450 students.

Working engineers, even those with years of experience, need to frequently renew and update their knowledge to deal with technology advances that occur, and have been occurring, at a rapid rate. There are likely few professions for which the need to renew and update is so critical.

2. Opportunities for placement of graduates. UC anticipates that CPEC in particular will expect detailed and convincing evidence

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[17] Engineering 296A is a yet-to-be-proposed course similar to UCLA’s 597A, which is offered by each engineering department.
of job market needs. This will be especially true for programs in graduate fields now well represented among UC campuses and California independent universities, as well as programs in the same field proposed by more than one campus. If UC already offers programs in the field, what are their placement records in recent years? What recent job listings, employer surveys, assessments of future job growth, etc. can be provided to demonstrate a strong market for graduates of this program, or for graduates of specialty areas that will be the focus of the program?

Since this program is aimed toward fully employed engineers, most of them will already be placed.

BCOE has numerous alumni employed throughout the U.S. and other countries. Not only are many of them candidates for our program, but many are also in positions to influence others to take advantage of what BCOE at UCR has to offer. We have no doubt that there is a considerable potential base of knowledgeable engineers who will appreciate BCOE’s efforts and enroll in the online M.S. in Engineering Program.

3. Importance to the discipline.

Because of rapid advances in technology and rapid changes in the needs of the nation, there is a significant need for continuing education and updating of skills in the engineering profession.

4. Ways in which the program will meet the needs of society.

It will give fully employed engineers an opportunity to update and/or shift the focus of their engineering skills. This program will make it convenient for working engineers to renew their education, while continuing their professional careers, and to have the benefit of instruction by and access to research-active UCR faculty members.

Society needs technological advances in medicine, energy, and sustainability. The faculty and administration of the BCOE wish to provide a critical educational service for California’s and the nation’s engineers and for the organizations that employ them and make those advances.

5. Relationship of the program to research and/or professional interests of the faculty.

This program will be based on existing areas of study within BCOE, and therefore should mesh well with the skills and interests of the faculty.

6. Program Differentiation. How will the proposed program distinguish itself from existing UC and California independent university programs, from similar programs proposed by other UC campuses? Statistics or other detailed documentation of need should be provided.
As mentioned above, the distinctive features of the proposed program are that:

(a) The Program will be self supporting.

(b) The Program will be college-wide. This structure enables efficient management at the college level and will facilitate the development of multi-disciplinary specializations.

(c) The Program will be delivered over the Internet. Students of the Program will receive all course materials, including lectures, in an “online” manner. The current mode of delivering many courses within the Bourns College of Engineering (BCOE) relies heavily upon information technology, using learning-management systems. That is, currently, BCOE students receive course lecture notes, assignments, announcements, and other items via WEB interfaces, and they participate in online forums for questions and answers with instructors and TAs. In addition, prepared lectures will be available online for the students of the online M.S. in Engineering Program. The full description of what is meant by “online lecture” is contained in Subsection 2.6.

(d) The Program’s requirements include a significant design experience, incorporating additional readings and the knowledge of the courses undertaken. The Program includes an online 296A course, Preparation for the Comprehensive Examination, which will address this engineering design experience — see Section 2.10.

(e) Program profits will mainly be used to support Ph.D. students.

(f) The design experience, the mode of delivery of the courses of instruction, the availability of this online M.S. in Engineering Program for employed engineers, and the ability to easily implement multidisciplinary programs of study are what distinguish this new program from the M.S. programs that BCOE departments currently offer.

4 Faculty

A statement on current faculty and immediately pending appointments. This should include a list of faculty members, their ranks, their highest degree and other professional qualifications, and a citation of relevant publications; data concerning faculty should be limited to only that information pertinent to the Committee’s evaluation of faculty qualifications. (For group programs only, one copy of letters from participating faculty indicating their interest in the program.

16 Engineering 296A is a yet-to-be-proposed course similar to UCLA’s 597A, which is offered by each engineering department.
should be included. In addition, comments from chairmen of departments with graduate programs closely related to or affected by the proposed program should be included.

As discussed in Subsection 2.2, we will initiate the online M.S. in Engineering Program with the Bioengineering specialization. We expect that as the Program develops, more specializations and associated faculty will become active participants.

All online courses are to be taught by the ladder faculty generally associated with the corresponding specialization. Occasionally, adjuncts, emeriti, and lecturers may also be instructors of online courses.

5 Courses

A list of present and proposed courses including instructors and supporting courses in related fields. The catalog description of all proposed courses should be appended. The relationship of these courses to specific fields of emphasis and future plans. How will the courses be staffed given existing course loads?

As previously noted, the proposed program is based on existing courses that are yet-to-be approved for online delivery. We, therefore, request that this proposal be approved contingent upon Committee on Courses approval of the online delivery of those courses.

The graduate courses of the BCOE are candidates, along with appropriate undergraduate prerequisite courses, for inclusion in the online M.S. in Engineering Program. Courses are added to the program as a result of the addition of specializations.

5.1 The Online Courses for the Program

An online course involves the following four components:

- A course management system, e.g., UCR’s iLearn (BlackBoard) system, which UCR has been using for many years and with which most UCR faculty are already familiar.

- For online consultation with TAs and faculty, a web-based meeting system that includes shared desktop, audio, and possibly video communication.

- Remotely available online video recordings of classroom lectures (e.g., Flash 7.0+) with accompanying presentation graphics (e.g., PowerPoint slides).

- Remotely proctored exams, for which we will initially follow UCLA’s policies and protocols.

1 [http://msengrol.seas.ucla.edu/current-students/exams](http://msengrol.seas.ucla.edu/current-students/exams)
The links available on UCLA’s current-students web page\footnote{http://msengrol.seas.ucla.edu/current-students} give a reasonably good idea of how their program works.\footnote{Unfortunately, their class-demo website is currently being updated.}

5.1.1 The Course Management System

UCR has deployed an online, full-service website, iLearn (based on BlackBoard), that provides student and faculty access to courses and associated materials. Assignments, answer sheets, announcements, lecture slides, lecture notes, etc., may be uploaded by the faculty and easily accessed and downloaded by the student. It also provides threaded forums by which student questions are addressed by the instructor or TA, as well as, possibly, by other students. An e-mail tool is built in that allows the instructor to easily send information to the students of the class.

5.1.2 The Online Lectures for the Program

There are, of course, several technologies for producing online lectures. We have decided that it is best to have the instructor visible and speaking directly to the remote audience. We have decided upon producing video-audio synchronized PowerPoint lectures. Many faculty members of BCOE have a good deal of experience with the production of such lectures. Considerable effort is required of the instructor to create such video-synchronized PowerPoint lectures for an entire course.

When the lecture has been constructed, various files are published (uploaded) to two servers, for the purpose of streaming the lecture material. Each of these servers acts as a backup for the other.

This technology enables the student to have complete control of the streamed lecture material. The student may stop (pause) the flow of the presentation to carefully view a particular slide, the student may easily move from the present slide to any other slide and its concomitant video explanation, and, of course, the student may repeat a lecture or portions of a lecture as often as desired. When the student “clicks” on the appropriate hyperlink, the lecture is streamed to that student’s machine and displayed in the machine’s browser.

5.1.3 Online Consultation

We are currently exploring various collaborative-software technologies (e.g., Skype plus VNC) that will enhance office hours, beyond the usage of online forums, allowing audio and visual contact between the instructor and several students of the class, even if such students are geographically dispersed.

5.1.4 Examinations

Examinations need not be online examinations. During the initialization stage, we expect to mainly enroll those applicants who are employed in organizations
with which we are familiar and for which we are able to “localize” the examination. As an example, if we have employees of Company X in Boston enrolled in the program, an examination (e.g., midterm, final) can be posted at a given time and downloaded to a Company X facility at which we have arranged for a trusted proctor (e.g., a member of the office of the “VP of University Relations”). We would also have an “open link” with the proctor to be able to answer the typical clarification questions that arise during an examination. The students’ examinations would then be scanned and sent back to the instructor via e-mail or by FTP to a protected site.

A design project (in lieu of comprehensive-examination) would be handled as a course (296A) in which the instructor will be in contact with the students, and with portions of the projects being sent to the instructor throughout the duration of the course. In addition to online lecture material (e.g., to clarify the design project), and in addition to the communication ability built into BCOE’s online learning-management system, we may also initiate a “net meeting” implementation to enhance our visual and audio communication with the students of this program.

If there are students of the program who are within a reasonable distance from the UCR Campus, those students may be asked to come to the campus for their examinations, to be synchronously taken along with their remote student colleagues.

As the program develops beyond the initialization stage, we will develop arrangements with organizations, including other schools, at which examinations may take place in a trusted, proctored environment.

5.1.5 Intellectual Property

UC policy is that “[T]he University owns the copyright to recordings of classroom lectures, but faculty own the copyright to their own lecture notes and teaching aids.” It is the College’s position that studio-based pre-recorded lectures are teaching aids and, therefore, the property of the faculty member who created those lectures. No other faculty member may use them without the explicit approval of the creator. Neither the College nor its representatives will distribute those lectures to others without the explicit approval of the creator of those materials.

5.1.6 Summary

In summary, the physical resources of BCOE, the availability of an online learning-management system, and our hardware and software facilities for recording and editing online lectures enable BCOE to provide this program. An outside vendor is unnecessary.

UCLA has a sample, demonstration course posted on its web site — unfor-

\[\text{22See http://www.ucop.edu/irc/wp/wp_Docs/wp002.html}\]

\[\text{23http://msengrol.seas.ucla.edu/prospective-students/demo}\]
Fortunately, it is currently being updated. Also, USC has an extensive web site detailing how they run their online programs. Regarding academic standards they note that:

“[S]ince the classes you are completing are the exact same courses our on-campus graduate students take, your degree earned is the exact same degree as our on-campus students, with absolutely no mention of ‘distance learning’ on your diploma or transcript.”

They also describe their process for appointing a proctor and processing exams. And, they have posted a cover sheet for exam proctors certification.

6 Resource requirements

Estimated for the first 5 years the additional cost of the program, by year, for each of the following categories:

1. FTE faculty

   *This is covered under “instructor compensation” in the projection chart below.*

2. Library acquisition

   *None.*

3. Computing costs

   *This will be covered by the instructional-services fee given in the projection chart below.*

4. Equipment

   *This will be covered by the instructional-services fee given in the projection chart below.*

5. Space and other capital facilities

   *This will be covered by the instructional-services fee given in the projection chart below.*

6. Other operating costs

   *This will be covered by the instructional-services fee given in the projection chart below.*

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24http://mapp.usc.edu/distanceeducation/index.html
25http://www.ufedge.ufl.edu/programs/degree.php
26http://www.ufedge.ufl.edu/partners/proctors.php
27http://www.ufedge.ufl.edu/pdf/ExamCoverSheet_2010.pdf
Indicate the intended method of funding these additional costs.

This program will be self supporting. Per the attached projections (below), after a brief start-up period, its expenses will be covered by student fees.

If applicable, state that no new resources will be required and explain how the program will be funded. If it is to be funded by internal reallocation, explain how internal resources will be generated.

This program will be self supporting. Per the attached projections (below), after a brief start-up period, its expenses will be covered by student fees.

State Resources to Support New Programs. The resource plan to support the proposed program should be clearly related to campus enrollment plans and resource plans. Campuses should provide detailed information on how resources will be provided to support the proposed program: from resources for approved graduate enrollment growth, reallocation, and other sources. What will the effects of reallocation be on existing programs? For interdisciplinary programs and programs growing out of tracks within existing graduate programs: What will the impact of the new program be on the contributing program(s)? When the proposed program is fully implemented, how will faculty FTE be distributed among contributing and new programs?

Our intention is to initiate this online M.S. in Engineering Program modestly. As stated above, we intend initially to offer a single specialization, Bioengineering. In each of the subsequent years, we intend to add an additional specialization (and possibly more), while continuing with the previous areas as well. At this point, a likely specialization to be included at the beginning of the second year is Water-Quality Control Systems and/or Computer Networks. The following table illustrates this conservative course offering plan by specialization: five incoming students per area per year with four of the five continuing through the second year.

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<th>Year</th>
<th>Specialization</th>
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<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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Table 1: Online M.S. in Engineering Program Course Offerings.
We propose that the basic fee for the online M.S. in Engineering Program be $15,000 per year for the two-year program, i.e., $30,000 per student for the two-year program. Revenue will be used for faculty compensation, Special Reader support for Ph.D. students, fee remissions, administrative and computer support. A faculty member’s compensation covers the instructor’s workload, comprising construction of new assignments, changes in the original lectures, online office hours, instructing and monitoring the special readers, and general grading responsibilities — payments to the faculty may be used for additional student support, travel, and summer salary. Programmer and Student Affairs (Administrative Analyst) assistance will also be needed, in addition to computer server equipment additions that will be needed as enrollment grows and the physical demands of lecture “streaming” increase. We will also allocate one Special Reader for each class. The nature of online lectures necessitates, certainly at the beginning of the Program, adequate consultation resources for the students of the Program. These positions also contribute to needed Ph.D. student support.

The following table describes the revenue and costs for a single specialization of the online M.S. in Engineering Program — the expectation is to introduce one new specialization per year. Profits will be used for unpredicted costs and for graduate fellowships for BCOE’s Ph.D. students.

It is expected that the technical courses will be delivered by tenure-track faculty, who will be both the developer of the course and its instructor. For offerings of that course, the faculty member will receive $400 per student per offering, and will have the assistance of a .25-FTE Special Reader, who will receive $4500 in salary plus $400 in benefits. Other courses, commonly the core engineering methodology courses, will be delivered by adjunct faculty or lecturers, who will work without a TA or Reader and will receive a $400/student/offering instructor fee in addition to $4500 in salary and $400 in benefits for each offering.

---

28These online courses will not be in lieu of or replacement for a faculty member’s normal teaching, research, or service duties.

29It is expected that .25-FTE Special Readers will be responsible for an average of five students and a maximum of eight — at that level the load would be split over two .25-FTE Special Readers or given to a .50-FTE Special Reader.
### M.S. in Engineering (online)

Nine-course, two-year program with a new cohort each fall

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td>Courses Offered</td>
<td>5</td>
<td>9</td>
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<tr>
<td>Enrollments</td>
<td>5</td>
<td>9</td>
<td>9</td>
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<tr>
<td>Average enrollment per offering</td>
<td>5</td>
<td>4.5</td>
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<tr>
<td>Total Annual Revenue</td>
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#### Online-Course Develop/Mgmt Fees

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<tbody>
<tr>
<td>Cost to develop 1st offering of online course</td>
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<tr>
<td>Cost to update for each subsequent offering</td>
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<tr>
<td>Instructional Services Fee (per student/offering)</td>
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#### Instructional Support

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<tr>
<td>Instructor compensation (per student/offering)</td>
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<tr>
<td>.25-FTE TA/Reader costs/offering (salary + fees)</td>
<td>$2,772</td>
<td>$3,255</td>
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#### 5 new students annually

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<td>Average enrollment per offering</td>
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<td>$135,000</td>
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#### Course Development (one-time costs)

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<td>Online course conversion ($5000 for 1st offering)</td>
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#### Direct Instructional Costs

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<td>Instructor compensation ($400/student/offering)</td>
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<td>Ongoing Instructional Costs</td>
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<td>$92,635</td>
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#### Three-Year Net Revenue\(^\text{31}\)

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<tr>
<td>Three-Year Net Revenue</td>
<td>$6979</td>
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\(^{31}\)This fee covers such things as student-affairs and technical services.

\(^{12}\)Any net-positive Revenue will be used to support BCOE Graduate Students.
7 Graduate Student Support

It is recommended that all new proposals include detailed plans for providing sufficient graduate student support. In fields that have depended on federal research grants, these plans should also discuss current availability of faculty grants that can support graduate students and funding trends in agencies expected to provide future research or training grants. Are other extramural resources likely to provide graduate student support, or will internal fellowship and other institutional support be made available to the program? Describe any campus fund-raising initiatives that will contribute to support of graduate students in the proposed program.

Since the online M.S. in Engineering Program is for employed engineers, the issue of support of graduate students of the program is not relevant. However, an important reason for the introduction of the online M.S. in Engineering Program is to generate funds to support Ph.D. students, and the profit by this program will be used primarily to do so.

How many teaching assistantships will be available to the program? Will resources for them be provided through approved enrollment growth, reallocation, or a combination? How will reallocation affect support in existing programs?

This program will be self supporting. Its TAs and Readers will be supported from fees generated by the program.

8 Governance

If the new program is being offered by a unit that does not/has not offer(ed) graduate degrees, then a setting forth of the Department or Group that will administer the program is required, and the proposal should include bylaws associated with the new program. Bylaws should also be included in with all proposals submitted by interdepartmental programs (IDPs). IDPs are graduate degree granting programs that are not offered by a single department, but administered by a group of faculty who are constituted for that purpose, and whose governance lies outside that of any single department.

Oversight committee. The proposed program will have an oversight committee appointed by BCOE’s dean and consisting of representatives from the various BCOE departments and programs. This committee will be chaired by the program’s director. Its current members are:

- Reza Abbaschian, Dean BCOE and former chair of Material Science and Engineering at the University of Florida (ex officio)
• Mark Matsumoto, Associate Dean BCOE and former chair of Chemical and Environmental Engineering at UCR (ex officio and representing Chemical and Environmental Engineering)

• Jie Chen, former chair of Electrical Engineering at UCR (representing Electrical Engineering)

• Rajiv Gupta, Professor of Computer Science and Engineering and Fellow of the Association for Computing Machinery (representing Computer Science and Engineering)

• Cengiz Ozkan, Associate Professor of Mechanical Engineering specializing in materials research (representing MS&E)

• Thomas Payne, former chair of Computer Science and Engineering at UCR (Current chair of program’s oversight committee)

• Jerome Schultz, founding chair of Bioengineering at UCR and member of the National Academy of Engineering (representing Bioengineering)

• Kambiz Vafai, Professor of Mechanical Engineering specializing in transport phenomena (representing Mechanical Engineering)

Instructors for the online courses will be selected and assigned via the same methods and criteria as for BCOE’s existing programs. Mostly, they will be ladder-rank UCR faculty. And, the fact that the program is online does not affect their credentials.

Applications to the online M.S. in Engineering Program are to be made to the Bourns College of Engineering and to the Graduate Division. The standards for admission are the same as those for BCOE’s traditional M.S. degrees, including GRE requirements and compliance with all Graduate Council regulations for admission. Each year, and for each specialization currently active in the online M.S. in Engineering Program, the Program’s Director will appoint at least two faculty members, associated with the corresponding specialization, to act as an admissions committee. Each committee will make its recommendations to the Director, who will forward them to the Graduate Division. This recommendation process is virtually equivalent to what is now in place for the current M.S. and Ph.D. programs.

The applicant shall have completed the substantial equivalent of the basic requirements for the degree of Bachelor of Science in Engineering, Computer Science, Physical Science, or Mathematics. The adequacy of the applicant’s preparation will be determined by the faculty admission committee.

Petitions, disqualification, and the legion of miscellaneous issues that arise are to be handled in the same manner as they are for the M.S. and Ph.D. programs.

Each student’s course work and comprehensive examination (major design experience and project) will be supervised as follows. For each specialization
that is active in the online M.S. in Engineering Program, the Director will appoint two faculty members, associated with that specialization, to oversee the students’ programs. The Director will recommend to the Graduate Division a committee of three faculty members, associated with the specialization, to constitute the comprehensive examination committee for the students of that specialization.

9 Changes in Senate regulations

The proposal should state clearly whether or not any changes in Senate Regulations at the Divisional level or in the Academic Assembly will be required. If changes are necessary (e.g., for all proposals for new degrees), the complete text of the proposed amendments or new regulations should be provided.

The following subsections discuss several related issues: (1) the reason for the requested degree designation, (2) the issue of differential fees, and (3) SR 694.

9.1 Master of Science in Engineering (M.S.)

It is well-understood in the engineering/computer-science community that the M.S. degree is the degree that leads to the specialized advanced education that is of importance to the student, to industry, and to the students entering the Ph.D. program. Engineers seek the M.S. degree to expand their engineering education to attain a level of technical competence that is generally not achieved at the baccalaureate level, and to enhance their opportunities and be of greater use to their employers. Indeed, the attainment of the M.S. generally leads to increases in pay.

The M.S. program provides the education by which engineers improve their educational and professional status; that is, the M.S. degree in engineering/computer-science areas is the de facto “professional” degree. To use any other designation would inappropriately diminish the dedication of the faculty and the value to be accrued by the students of the program. Our proposed degree program is educationally equivalent to the traditional M.S. program and so should be its degree designation. It is the position of the College’s administration and faculty that to call the degree anything other than M.S. would be inappropriate, misleading, and would contradict the Program’s content and would defeat the Program’s purpose. UCLA, Stanford, USC, Georgia Tech, and a host of other engineering schools use M.S. and in no way distinguish the online program’s degree from the traditional degree.

9.2 Differential Fees

The proposed online Master-of-Engineering program is educationally comparable to the traditional M.S. programs offered by the College. However, consider-
able extra effort and time are required of the participating faculty who will not receive “teaching credit” for the courses of this program. Additionally, there will be considerable infrastructure, special reader, programmer analyst, and student affairs officer costs.

9.3 SR 694

In 1956, in a “Report of the Graduate Council, Northern Section,” (1956/05/24, Academic Senate, Northern Section: Notice of Special Meeting of the Representative Assembly (Vol. II, No. 11)), the following opening sentence occurs:

“At its meeting on April 23, 1956, the Graduate Council gave consideration to a report of its sub-committee appointed to study a proposal presented by Dr. B. M. Woods, Vice-Chairman–University Extension, that off-campus instruction be offered for the master’s degree, and to study also the entire conception of off-campus instruction directed toward higher degrees.”

The resulting legislation, SR 883, was renumbered in 1964 to SR 694. The main request by the Vice-Chairman of University Extension, in 1956, was to allow University Extension to have a wider role in Master’s programs. It is our opinion, upon reading the referenced report, that “off-campus instruction” refers to off-campus centers generally operated by Extension. Parts C and D also reveal the Council’s concern with faculty, courses, and programs at such centers. It is our opinion that SR 694(B) is essentially a restriction on Extension with respect to the M.A. and M.S. degrees and certainly should not be considered to be a restriction on ladder faculty presenting courses and programs approved by the Graduate Council, the Committee on Courses, and the Committee on Educational Policy. In any event, SR 694 is so thoroughly intertwined with Extension and its centers (indeed, the opening sentence of SR 694 requires the cooperation of Extension) that we strongly believe that SR 694 is irrelevant with respect to BCOE’s proposal.

Moreover, today’s technology could not have been envisioned by the legislators of 1956.
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<th>DATE OF REVIEW</th>
<th>TEAM REPORT</th>
<th>PRELIM. RESP. RECEIVED</th>
<th>PRELIM. RESP. DUE</th>
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* Internal Review
March 4, 2011

Chair Gauvain
Academic Senate

RE: Campus Naming Committee

Dear Mary:

As Chair Designee of the UCR Committee on Naming Campus Properties, Programs and Facilities, I am requesting the review and approval by the Academic Senate Executive Council for these naming opportunities.

- *Early Career Chair in Urban Entomology* has been recommended by the Dean, College of Natural and Agricultural Sciences, Thomas Baldwin.
- *Winston Chung Endowed Term Professorship in Energy Innovation* and the *Winston Chung Endowed Term Professorship in Sustainability* have been recommended by the Dean, Bourns College of Engineering, Reza Abbaschian.
- *Winston Chung Hall* is the proposed name for Engineering Building Unit 2, an academic research facility built in 2005. This naming has been recommended by the Dean, Bourns College of Engineering, Reza Abbaschian.
- Establish the *Winston Chung Global Energy Center* within the Center for Environmental Research & Technology (CE-CERT) has been recommended by the Dean, Bourns College of Engineering, Reza Abbaschian.

Please review the attached requests, gift agreements and summary details. These proposed names need approval by the Academic Senate before it is endorsed by the Campus Naming Committee. Please respond with your recommendation by Friday March 18, 2011.

Sincerely,

Gretchen S. Bolar
Vice Chancellor

Attachments

xc:  Vice Chancellor Hayashida
     Dean Abbaschian
     Dean Baldwin
     Assistant Dean Parker
     Assistant Dean Preble
     Assistant Vice Chancellor Smith
     Executive Director Ehlers
SUMMARY INFORMATION

UCR: NAMING CAMPUS PROPERTIES, ACADEMIC AND NON-ACADEMIC PROGRAMS, AND FACILITIES

Proposed Name: *Winston Chung Hall*
In the Bourns College of Engineering

Building Background:
- Current Building Name: Engineering Building Unit 2
- Official Building Name: Winston Chung Hall
- Building Name (12-byte): WINSTON HALL
- Capital Asset Account Numbers: P5194
- Building Assignable Square Feet: 99,878 asf
- Building Basic Gross Square Feet: 157,986 gsf
- Location: UCR Core Campus

Gift Amount: $10,000,000
Gift Agreement: 02/25/2011

Description: Winston Chung Hall is recommended as the new name for Engineering Building Unit 2. This name change is in recognition of a $10,000,000 donation from Winston Chung, which will also support two Endowed Term Professorships in the Bourns College of Engineering and establish the Winston Chung Global Energy Center within Center for Environmental Research & Technology (CE-CERT).

See attached Background Information.

Site Map:
Date: February 28, 2011

To: Gretchen Bolar, Vice Chancellor of Financial & Business Operations

Cc: Peter Hayashida, Vice Chancellor of University Advancement
Reza Abbaschian, Dean, Bourns College of Engineering (BCOE)
Linda Parker, Assistant Dean of Development, BCOE

From: Zachary A. Smith, Assistant Vice Chancellor of Development

Subject: Winston Chung Naming Approvals

Dear Gretchen,

In accordance with approved UCR policy, I am forwarding three packets for your review: 1) to rename EBU II as Winston Chung Hall, 2) to establish the Winston Chung Global energy Center, and 3) to establish two endowed term professorships, the Winston Chung Endowed Term Professorship in Energy Innovation and the Winston Chung Endowed Term Professorship in Sustainability.

This packet includes:

- Initial Request for Approval to Name/Establish an Endowed Term Chair (for two endowed term professorships)
- Initial Request for Approval to Name/Establish a Property, Program or Facility (for Winston Chung Hall)
- Initial Request for Approval to Name/Establish a Property, Program or Facility (for Winston Chung Global Energy Center)
- MOU signed by the donor, Winston Chung, President of Winston Battery Limited, Timothy P. White, Chancellor, University of California, Riverside, and Reza Abbaschian, Dean, Bourns College of Engineering
- Background information on Winston Chung

Please copy me on any memos and/or or responses regarding this request. Should you have any questions or need any additional information, feel free to contact me at extension 26302.

Sincerely,

Zachary A. Smith, Ph.D.
Assistant Vice Chancellor of Development

Attachment
INITIAL REQUEST FOR APPROVAL TO NAME/ESTABLISH AN ENDOWED CHAIR

This form is to help review gifts for compliance with academic plans and priorities, and to facilitate campus review procedures for namings.

Upon completion of this request form, the Dean/Unit Head forwards it for signature to the Associate Vice Chancellor, Development and Vice Chancellor, University Advancement. The Associate Vice Chancellor, Development or designee will submit the request, with draft gift agreement and supporting documentation to the Executive Vice Chancellor and Provost and Vice Chancellor for Academic Planning & Budget for campus review. If approved for recommendation, the EVC&P’s Office follows the appropriate procedure for Endowed Chairs.

I. Background Information:
   A. Submitted by:
      Name: Reza Abbaschian
      Title, College/Unit: Dean, Bourns College of Engineering
   B. Type of Gift and Comments:
      ➢ Endowed Chair/Distinguished Professorship: Two Endowed Term Professorships
      ➢ Location of FTE: Bourns College of Engineering
   C. Proposed names (if any, involving gift): Winston Chung Endowed Term Professorship in Energy Innovation and the Winston Chung Endowed Term Professorship in Sustainability.
      Honorific naming (no gift involved):
   D. Proposed use(s): To advance the mission of the Bourns College of Engineering

II. Academic Information: (please attach explanation)
   A. Academic Justification: Explain how the proposed gift or endowment fits into the College/Unit’s Academic Plan.

   The Bourns College of Engineering, in accordance with UCR policy, will establish two named endowed term professorships: The Winston Chung Endowed Term Professorship in Energy Innovation and the Winston Chung Endowed Term Professorship in Sustainability.

   The Bourns College of Engineering is the only major engineering college in California's fast-growing Inland Empire. The college offers talented students and faculty a living laboratory for addressing the complex issues and emerging opportunities that engineers and our society will encounter in the 21st century. Endowed Term Professorships connected to this college will enhance the college’s national visibility and stature, and be invaluable in recruiting and retaining faculty of distinction. For maximum academic flexibility, the Winston Chung Endowed Term Professorships may be filled by a tenure track appointment, tenured appointment, or a series of temporary appointments.
B. Resources: Describe the resources that will be necessary to support the proposed Chair (e.g., FTE and other funding.) Please refer to the College/Unit Academic Plan as appropriate.

No additional resources are needed. These are existing FTEs in the college. Distribution from the endowed fund will be available to the chair holders in support of their teaching, research, and service activities according to a budget recommended annually and approved by the dean. The chair endowment will be administered in accordance with the *UCR Policy and Procedures on Endowed Chairs: Establishment, Administration, and Appointment of Faculty*. The total return earned by the endowment in excess of the amount approved annually for spending will be returned to the Fund’s principal to help it grow. Unused distribution from a previous year may be combined with that of the current year for spending purposes, or added to the Fund’s principal.

III. Contribution Information:
   A. Total amount of private funds expected to be committed (or being discussed):
      Earnings from a gift of $10 million will support two endowed term chairs, a named Center, and will enable EBU II to be renamed in honor of the donor. The income from $0.5 million of the endowment will be used to support each of the chairs.

   B. Form of private contribution:
      Outright Gift

      Written Pledge (Expected beginning date/ Fulfillment Date:

   C. Initial contribution/pledge payment expected

   D. Source(s) of private contribution(s):
      | Donor(s) | Amount(s) |
      |----------|-----------|
      | MVP RV   | $10 million* |

      *Only portion of $10 million will be going to endowed chairs. Specific terms regarding endowed chairs will be reflected in the gift agreement, currently in the process of being completed.

   E. Will this gift/pledge be anonymous, without publicity? ☐ Yes  X No
IV. College/UCR/UC Commitment:
   A. Will any additional college, campus-wide or system-wide resources be sought/required (e.g., space, special facilities, equipment, etc.)? How will they be funded? **No additional resources will be required.**
   B. If Endowed Chair or Professorship, is this a New FTE \* Existing FTE? If new, please give reference to your Academic Plan: ____________

V. College/Unit/Faculty/Academic Senate Consultation
This naming has been reviewed by and received approval from the Executive Vice Chancellor & Provost affected by the named chair.

Submitted by:

[Signatures]

Reza Abbaschian, Dean
Bourns College of Engineering

Peter Hayashida, Vice Chancellor, University Advancement

Joel Mynson, Associate Vice Chancellor, Development

Jan Wildman, Assistant Vice Chancellor, Advancement Administration

[Dates]
Feb. 7, 201

2/8/11

2/25/11

2/25/11
INITIAL REQUEST FOR APPROVAL TO NAME/ESTABLISH A PROPERTY, PROGRAM OR FACILITY

This form is to help review gifts for compliance with academic plans and priorities, and to facilitate campus review procedures for namings.

Upon completion of this request form, the Dean/Unit Head forwards it for signature to the Associate Vice Chancellor, Development and Vice Chancellor, University Advancement. The Associate Vice Chancellor, Development or designee will submit the request, with draft gift agreement and supporting documentation to the Executive Vice Chancellor and Provost and Vice Chancellor for Academic Planning & Budget for campus review. If approved for recommendation, the EVC&P’s Office follows the appropriate procedure for Naming of Properties, Programs and Facilities.

I. Background Information:
   A. Submitted by:
      Name: Reza Abbaschian
      Title, College/Unit: Dean, Bourns College of Engineering
   B. Type of Gift and Comments:
      This is an endowment gift that will rename EBU II as Winston Chung Hall. Earnings from the endowment will support two endowed term chairs, launch a named Global Energy Center, and help support strategic initiatives of the College.
   C. Proposed name (if any, involving gift): Winston Chung Hall
   D. Honorific naming (no gift involved):
   E. Proposed use(s): To advance the mission of the Bourns College of Engineering

II. Academic Information: (please attach explanation)
   A. Academic Justification: Explain how the proposed gift or endowment fits into the College/Unit’s Academic Plan.

The Bourns College of Engineering (BCOE), in accordance with UCR policy, will rename Engineering Building Unit II (EBU II) as Winston Chung Hall.

BCOE’s vision is to become a nationally recognized leader in engineering research and education with the profile of a top-25 engineering school. The endowment associated with naming EBU II as Winston Chung Hall will help the College achieve greater prominence and stature within the nation and the world and move closer to realizing this vision. Earnings from this endowment will benefit every aspect of the College and help the College move forward more rapidly with its strategic initiatives.

   B. Resources: Describe the resources that will be necessary to support the proposed Property/Program/Facility (e.g., other funding.) Please refer to the College/Unit Academic Plan as appropriate.

No additional resources are needed. EBU II is an existing building that opened its doors to students during the 2004-2005 academic year.

III. Contribution Information
A. Total amount of private funds expected to be committed (or being discussed):
$10,000,000

B. Form of private contribution (s):
X Outright Gift (Date: 2011.)
○ Written Pledge (Expected beginning date: _____ Fulfillment Date: _____.)

C. Initial contribution/pledge payment expected $___________ by (date) ______.

D. Source(s) of private contribution(s):
Donor(s) Amount(s)
MVP RV $10,000,000

E. Will this gift/pledge be anonymous (donor requests no publicity)? ○Yes  X No

IV. College/UCR/UC Commitment:

A. Will any additional college, campus-wide or system-wide resources be sought/required (e.g., space, special facilities, equipment, etc.)? How will they be funded?

No additional resources are needed. EBUII is an existing building that opened its doors to students during the 2004-2005 academic year.

B. If Property, Program or Facility, has consultation with appropriate campus/UC entities occurred? Yes
(Attach supporting documents.)

IV. College/Unit/Faculty Consultation
This naming has been reviewed by and received approval from the faculty of the (specific department/school/unit) Bourns College of Engineering affected by the named building, etc.

Submitted by:

Reza Aschian, Dean, Bourns College of Engineering  Feb. 7, 2011

Joel Munson, Associate Vice Chancellor, Development  2/25/11

Peter Hayashida, Vice Chancellor, University Advancement  2/15/11
INITIAL REQUEST FOR APPROVAL TO NAME/ESTABLISH A PROPERTY, PROGRAM OR FACILITY

This form is to help review gifts for compliance with academic plans and priorities, and to facilitate campus review procedures for namings.

Upon completion of this request form, the Dean/Unit Head forwards it for signature to the Associate Vice Chancellor, Development and Vice Chancellor, University Advancement. The Associate Vice Chancellor, Development or designee will submit the request, with draft gift agreement and supporting documentation to the Executive Vice Chancellor and Provost and Vice Chancellor for Academic Planning & Budget for campus review. If approved for recommendation, the EVC&P's Office follows the appropriate procedure for Naming of Properties, Programs and Facilities.

I. Background Information:
   A. Submitted by:
      Name: Dean Reza Abbaschian
      Title, College/Unit:
      Bourns College of Engineering / Center for Environmental Research & Technology (CE-CERT)
   B. Type of Gift and Comments:
      Property:
      Program: Engineering/Energy Research
      Facility/Building:
   C. Proposed name (if any, involving gift):
      Winston Chung Global Energy Center
   D. Honorific naming (no gift involved):
   E. Proposed use(s):
      Establish the Winston Chung Global Energy Center within the Bourns College of Engineering-Center for Environmental Research & Technology (CE-CERT). An initial focus of the Center will be on Life Source Rare Earth Lithium Batteries, bio-inspired technology, and the development of clean energy and energy storage. Bridging the gap between industry and academia, the Winston Chung Global Energy Center will contribute to the economic, social and environmental health of communities around the world.

II. Academic Information: (please attach explanation)
   A. Academic Justification: Explain how the proposed gift or endowment fits into the College/Unit's Academic Plan.
      The vision of the Bourns College of Engineering (BCOE) is to become a nationally recognized leader in engineering research and education with the profile of a top-25 engineering school. BCOE’s strategic initiatives include
increasing visibility, enhancing research infrastructure, attaining leadership in certain strength areas and initiating new thrusts and new centers. The Winston Chung Global Energy Center aligns closely with all of these initiatives and will be a positive addition to BCOE’s pursuit of excellence.

B. Resources: Describe the resources that will be necessary to support the proposed Property/Program/Facility (e.g., other funding.) Please refer to the College/Unit Academic Plan as appropriate.

No additional resources will be needed to launch the Winston Chung Global Energy Center. Winston Chung, through MVP RV, is establishing a $10 million endowment that will rename EBUII as Winston Chung Hall. A portion of the earnings from this endowment will help support the Winston Chung Global Energy Center. The Center will operate under CE-CERT. Established in 1992, CE-CERT is well established and completely self-supporting. The Center will follow CE-CERT’s model of pursuing outside funding through contracts, grants and gifts.

II. Contribution Information:
A. Total amount of private funds expected to be committed (or being discussed):
   - $10,000,000
   - MVP RV $10 million*

*Only a portion of $10 million will be going to the Winston Chung Global Energy Center. Specific terms regarding the Center will be reflected in the gift agreement, currently in the process of being completed.

B. Form of private contribution(s):
   - X Outright Gift (Date expected: 2011.)
   - Written Pledge (Expected beginning date: March 2011, Expected fulfillment Date: March 2011.)

C. Initial contribution/pledge payment expected: $10,000,000

D. Source(s) of private contribution(s):
   - Donor(s) MVP RV Amount(s): $10,000,000

E. Will this gift/pledge be anonymous (donor requests no publicity)? ○Yes X No

IV. College/UCR/UC Commitment:
A. Will any additional college, campus-wide or system-wide resources be sought/required (e.g., space, special facilities, equipment, etc.)? How will they be funded? Office space, administrative support, furniture and supplies.

No state resources will be needed for the Winston Chung Global Energy Center. The Winston Chung Global Energy Center will operate out of CE-CERT and will use the available labs, office space, and administrative support.
B. If Property, Program or Facility, has consultation with appropriate campus/UC entities occurred?
   Yes
   (Attach supporting documents.)

IV. College/Unit/Faculty Consultation
This naming has been reviewed by and received approval from the faculty of the (specific department/school/unit) **College of Humanities, Arts, and Social Sciences** affected by the named building, etc.

Submitted by:

[Signature]
Rita Abbaschian, Dean, Bourns College of Engineering
Feb 7, 2011
Date

[Signature]
Joel B. Munson, Associate Vice Chancellor, Development
2/25/11
Date

[Signature]
Peter Hayashida, Vice Chancellor, University Advancement
2/8/11
Date
I. Purpose

This Memorandum of Understanding (MOU) serves as a written agreement between Mr. Winston Chung and the Bourns College of Engineering at the University of California, Riverside. This agreement defines a philanthropic gift in 2011 from Mr. Winston Chung to the University through the Foundation, and outlines the scope of the permanent recognition he will receive for his generous support.

II. Donation

Mr. Winston Chung agrees to donate USD10,000,000 cash to the University of California, Riverside through the University’s Foundation.

IV. Recognition

Upon receipt of Mr. Winston Chung’s donation, the University and its Foundation will establish the Winston Chung Endowed Fund. As an endowment, the Winston Chung Endowed Fund will be permanent. The University’s Foundation will invest this gift according to the University Foundation policies, and each year’s portion of the earnings will support the activities and programs listed below in this MOU. A portion of the earnings will be reinvested to grow the fund over time and protect it from the effects of inflation. Once this fund is fully established, the University of California, Riverside will:

a. Name the building currently known as Engineering Building II as Winston Chung Hall. This naming will include:
   i. Placing the name Winston Chung Hall in large letters on the exterior of the building, in accordance with UCR architectural guidelines and policies.
ii. Placing a distinctive plaque in a prominent location inside the building. This plaque will have Mr. Winston Chung’s name in both English and Chinese. Mr. Winston Chung’s picture and a description of his background and accomplishments will be inscribed on the plaque.

b. Create two endowed Term Professorships in the Bourns College of Engineering. These Professorships shall be named the Winston Chung Endowed Professorship in Energy Innovation and the Winston Chung Endowed Professorship in Sustainability. The Dean of the Bourns College of Engineering, according to UCR Riverside policy, will appoint two engineering faculty members to hold these titles for a period of three years with the option of renewal. Each professor, through the Dean, will provide Mr. Winston Chung with an annual report of how the funds have been used to help advance research.

c. Establish the Winston Chung Global Energy Center within the Bourns College of Engineering Center for Environmental Research & Technology (CE-CERT). An initial focus of the Center will be on Life Source Rare Earth Lithium Batteries, bio-inspired technology, and the development of clean energy and energy storage. Bringing the gap between industry and academia, the Winston Chung Global Energy Center will contribute to the economic, social and environmental health of communities around the world. The College will provide Mr. Winston Chung with annual reports highlighting the progress of the Center’s research activities.

V. Engagement in the College

The Bourns College of Engineering is honored to strengthen its relationship with Mr. Winston Chung by providing opportunities for him to actively participate in the College. To engage Mr. Winston Chung in the College, the Dean will:

a. Invite Mr. Winston Chung to join the Dean’s Council of Advisors for the engineering college. The Council is comprised of influential leaders who provide an external perspective on the College’s programs and activities. They also review curricula and research for relevance, purpose and progress and provide other assistance and support as needed.
b. Expand the activities of the Dean’s Council of Advisors by adding a Committee for Global Affairs and inviting Mr. Winston Chung to serve as the Founding Chair. In this capacity, Mr. Winston Chung can help the College expand its international relations, particularly with China.

c. Propose to the Chancellor of the University of California, Riverside, to name Mr. Winston Chung as the first Fellow of the Bourns College of Engineering.

VI. Additional Opportunities

Mr. Winston Chung has indicated an interest in also donating an electric vehicle charging station to the University of California, Riverside, during calendar year 2011. The University will gratefully accept this donation and with Mr. Winston Chung’s assistance will make appropriate arrangements for its installation, operation, and maintenance. This station will be part of the Winston Chung Global Energy Center and will be used for research, commercialization of new technology, and collaborative partnerships with industry. Mr. Winston Chung has expressed an interest in research leading to the development of clean energy and improvements in battery technology. In addition, Mr. Winston Chung has told the University that he is considering other proposals to support faculty research, including that of Professor David Knezevic. Mr. Winston Chung will have the opportunity to determine the type and scope of those research projects. If any intellectual property arises result from this research, Mr. Winston Chung will have assignable rights to commercialization, as specified in the contract or grant agreement governing the work.

This MOU shall enter into force on the date of the signing by qualified representatives of both parties.

Timothy P. White
Dean
University of California, Riverside

January 24, 2011

Joseph A. Romano
Dean
Bourns College of Engineering

January 24, 2011

VIII. Signatures

[Signatures]
Biography of Winston Chung

Founder, Chairman and CEO, Winston Global Energy Company, Ltd.

Winston Chung, inventor of the lithium iron phosphate battery, is the founder, chairman and CEO of Winston Global Energy Co., Ltd. The company invests, manufactures and markets energy storage solutions and lithium batteries. Winston also serves as director and chief scientist of the People's Republic of China's National 863 Lithium Battery Research and Development Center. As the major shareholder of a listed Company on the Hong Kong Stock Exchange, he leads an elite team expanding clean energy research and product development.

In 2010, Winston acquired the former Fleetwood Enterprises facility in Riverside, California. He is the majority stockholder and chairman of the board of directors of MVP RV, a manufacturer of recreation vehicles. Winston is investing $310 million in MVP RV to promote motorhome exports to China. In 2011, he invested $5 million in Balqon Corporation (BLQN.OB), a manufacturer of electric-powered vehicles and is the chairman of the board of directors.

A child prodigy, Winston invented the Traditional Chinese Medical (TCM) pulse meter at age 12. At 13, he began to study TCM and Pharmacology. His compilation of the Meridional Flow on Acupuncture and Moxibustion was published when he was 16. At 17, he invented a 3-in-1 television system. He invented the maintenance-free lead-acid battery (1982); the plastic lithium-ion rechargeable battery (1989); the waterborne adhesive lithium-ion rechargeable battery (1995); the rare earth element lithium yttrium rechargeable battery (2001) and the rare earth element lithium-sulfur rechargeable battery (2003), which is the most advanced battery technology in the world.

Winston enjoys music, art and painting. He was born on August 10th, 1958 in Guangdong Province, China.
Date: January 25, 2011

To: Gretchen Bolar, Vice Chancellor of Financial & Business Operations

Cc: Peter Hayashida, Vice Chancellor of University Advancement
  Tom Baldwin, Dean, College of Natural and Agricultural Sciences (CNAS)
  Holly Preble, Assistant Dean of Development, CNAS

From: Zachary A. Smith, Assistant Vice Chancellor of Development

Subject: Early Career Chair in Urban Entomology; for review by the UCR Academic Senate

Dear Gretchen,

In accordance with the approved UCR Policy for Naming Campus Properties, Academic and Non-academic Programs, and Facilities, I am forwarding the Early Career Chair in Urban Entomology for your review.

This packet includes:

- Initial Request for Approval to Name/Establish an Endowed Term Chair
- Due diligence letter to be sent to $1,000 donors and above, per UCOP’s recommendation
- Supporting emails from Judy Lehr and UCOP
- Sample solicitation materials

Please copy me on any memos and/or responses regarding this request. Should you have any questions or need any additional information, feel free to contact me at extension 26302.

Sincerely,

Zachary A. Smith, Ph.D.
Assistant Vice Chancellor of Development

Attachment
INITIAL REQUEST FOR APPROVAL TO NAME/ESTABLISH AN ENDOWED CHAIR

This form is to help review gifts for compliance with academic plans and priorities, and to facilitate campus review procedures for namings.

Upon completion of this request form, the Dean/Unit Head forwards it for signature to the Associate Vice Chancellor, Development and Vice Chancellor, University Advancement. The Associate Vice Chancellor, Development or designee will submit the request, with draft gift agreement and supporting documentation to the Executive Vice Chancellor and Provost and Vice Chancellor for Academic Planning & Budget for campus review. If approved for recommendation, the EVC&P's Office follows the appropriate procedure for Endowed Chairs.

I. Background Information:
   A. Submitted by:
      Name: Thomas Baldwin
      Title: Dean, College of Natural and Agricultural Sciences
   B. Type of Gift and Comments:
      ➢ Endowed Chair/Distinguished Professorship: Endowed Term Chair
      ➢ Location of FTE: College of Natural and Agricultural Sciences
   C. Proposed name (involving gift): Early Career Chair in Urban Entomology
   D. Proposed use(s): To advance the mission of the College

II. Academic Information:
   A. Academic Justification: Explain how the proposed gift or endowment fits into the College/Unit’s Academic Plan.

      The College of Natural and Agricultural Sciences, in accordance with UCR policy, will establish the Early Career Chair in Urban Entomology to further instruction and applied research on the control of termites, ants, cockroaches, yellow jackets, fleas, and other urban pests. For more than 35 years, the Department of Entomology has been a research leader pioneering solutions for California’s structural pest control industry and throughout the world, and has long term goals in this field of study. This chair will enhance our national visibility in recruiting and retaining faculty and students of distinction, maintain undergraduate and graduate training in urban entomology, and signify UCR’s continuing commitment to extend knowledge gained from research to the industry and for the public good.

      The Early Career Chair in Urban Entomology will be assigned to the Department of Entomology. For maximum academic flexibility, the chair may be filled by a tenure-track appointment, tenured appointment, temporary appointment for a specific period of time, or a series of temporary appointments. It may also be filled by a cooperative extension specialist.

   B. Resources: Describe the resources that will be necessary to support the proposed Chair (e.g., FTE and other funding.) Please refer to the College/Unit Academic Plan as appropriate.

      No additional resources are needed. This is existing FTE in the college. Distribution from the endowed fund will be available to the chair holder in support of his/her teaching, research, and service activities according to a budget recommended annually.
to the chair of the department and approved by the dean. The chair endowment will be administered in accordance with the UCR Policy and Procedures on Endowed Chairs: Establishment, Administration, and Appointment of Faculty. The total return earned by the endowment in excess of the amount approved annually for spending will be returned to the Fund's principal to help it grow. Unused distribution from a previous year may be combined with that of the current year for spending purposes, or added to the Fund's principal.

III. Contribution Information:
A. Total amount of private funds expected to be committed (or being discussed):

The Early Career Chair in Urban Entomology will be funded through a transfer of $360,000 from the Urban Entomology Endowed Research Fund (UCRF #6F0004). Established in 1991 by Dr. Michael K. Rust, Professor of Urban Entomology, the Urban Entomology Endowed Research Fund now totals approximately $400,000 thanks to the generous support of individuals and companies, most associated with the pest control industry. The college feels that the fund’s research promise — a legacy of perpetual support in research related to “new pest control products, treatment strategies, equipment, education, and rational responses to problems that affect the pest control industry” — can best be satisfied by using these funds to appoint a dedicated chair holder who, in turn, will manage the chair’s endowment in keeping with these instructional, research, and outreach activities. Remaining funds in the Urban Entomology Endowed Research Fund will continue to be managed by Professor Rust, or his replacement upon retirement. In November 2010, fund contributors were notified that an endowed chair was under consideration (see attached Due Diligence Letter to Donors and the Clarification of Fund’s Purpose).

It is assumed that over time, through additional gifts and prudent investment policies, the Early Career Chair in Urban Entomology endowment will grow. As the corpus grows, in accordance with existing UCR policies and procedures, the dean of the college in consultation with chair of the Department of Entomology may choose to fund additional early career chairs in urban entomology and/or increase the distribution to an existing chair holder. Based on precedent, the Early Career Chair in Urban Entomology may also be redesignated for a senior-rank chair holder. In this case, it will be renamed the Endowed Chair in Urban Entomology (currently, the endowment minimum to establish a senior-level chair is $1 million).

The College of Natural and Agricultural Sciences has already launched a major fundraising initiative with the help of Mr. Corky Mizer, founder of Corky’s Pest Control headquartered in San Marcos, to raise gifts from California’s structural pest control industry for endowed chairs in urban entomology. A new fund, called the Urban Entomology Chair Fund (Quasi Endowment), has been specifically established as the “parent fund” for this purpose.

At a future date, individual urban entomology chairs may become named in honor of faculty and individuals of distinction. Any name change request will follow the UCR Policy and Procedures on Endowed Chairs.

Form of private contribution (s):

( X ) Outright Gift (Date: Within 30 days of chair approval)
☐ Written Pledge Expected beginning date: _____ Fulfillment Date: _____.

B. Initial contribution/pledge payment expected:

C. Source(s) of private contribution(s):

<table>
<thead>
<tr>
<th>Lead Donor(s)</th>
<th>Amount(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Entomology Endowed Research Fund $360,000 transferred from UCRF Fund #6F0004</td>
<td></td>
</tr>
</tbody>
</table>

D. Will this gift/pledge be anonymous, without publicity?  ☐ Yes  ☒ No

The first occupant will be announced once the chair is approved and the endowment established.

IV. College/UCR/UC Commitment:

A. Will any additional college, campus-wide or system-wide resources be sought/required (e.g., space, special facilities, equipment, etc.)? How will they be funded?  ☐ No additional resources required.

B. If Endowed Chair or Professorship, is this a ☐ New FTE  ☒ Existing FTE

If new, please give reference to your Academic Plan: ____________________

V. College/Unit/Faculty/Academic Senate Consultation

This naming has been reviewed by and received approval from the Divisional Deans and Department Chairs/faculty of the College of Natural and Agricultural Sciences affected by the named chair.

Submitted by:

Thomas O. Baldwin, Dean  
College of Natural and Agricultural Sciences  
1/26/11  
Date

Joel B. Minson, Associate Vice Chancellor, Development  
1/27/11  
Date

Peter A. Hayashida, Vice Chancellor for University Advancement  
1/28/11  
Date
Sample Due Diligence Letter

January 15, 2011

Mr. Corky Mizer
President and CEO
Corky’s Pest Control
909 Rancheros Drive
San Marcos, CA 92069

Dear Corky:

Thank you for being an important contributor to the *Urban Entomology Endowed Research Fund* at the University of California, Riverside. I am pleased to report that this fund has grown from a starting gift of $25,000 in 1991 and now totals nearly $400,000 as a result of the ongoing support from the pest control industry and the fundraising efforts of Professor Michael Rust.

As the changing California economy leads us all to think seriously about our spending priorities, Dr. Rust and the Department of Entomology have decided that the legacy of your investment in the *Urban Entomology Endowed Research Fund* — to support pioneering research in urban entomology and service to the pest control industry — would best be served at this time by funding a faculty position to specifically provide these instructional, research, and outreach activities. In higher education, this is done by establishing an endowed chair.

In this light, we are asking the University of California Regents to approve the creation of an **Endowed Chair in Urban Entomology** in the Department of Entomology at UC Riverside. While the cost to fully endow this chair for a senior faculty member is $1.5 million, a transfer of $360,000 from the *Urban Entomology Endowed Research Fund* will allow us to initially fill the chair as an “early career” or cooperative extension position.

We are excited about this possibility and hope you agree.

Endowed chairs are among the most prestigious positions in higher education. As Urban Entomology faculty retire, our ability to recruit new faculty of distinction to open posts will be greatly enhanced. Endowed chairs provide national visibility and will give the Department of Entomology added leverage to attract top graduate and undergraduates into the field of urban entomology. Most importantly, an endowed chair is a permanent position and will serve to anchor urban entomology as a research focus.
For more than 35 years, the Department of Entomology at UC Riverside has been a research leader pioneering solutions for California's structural pest control industry and throughout the world, moving knowledge gained from research to the industry for the public good. We continue to have long-term goals in this field of study and welcome your ongoing partnership.

If you have any questions or concerns about this change, please call me within 30 days of this letter. I am working directly with Dr. Rust to move this project forward and can be reached at (951) 827-3278.

Sincerely,

Holly Preble  
Assistant Dean of Development
Subject: possible Urban Entomology Term Chair
From: "Judy Lehr" <judy.lehr@ucr.edu>
Date: Wed, 24 Mar 2010 10:04:33 -0700
To: "June Smith" <June.Smith@ucop.edu>
CC: "Holly Preble" <holly.preble@ucr.edu>

June, Asst Dean for Development in the college of Natural and Agricultural Sciences is in discussion with an Urban Entomology professor regarding a possible term chair. Over many years, he has raised $325k through industry support in the foundation endowed fund he has built for pest management research. He is now ready to help with fundraising to take it over the $360k mark this year so it can become an endowed early career term chair. The dean of the college supports this plan. I think they will be ready soon to start the approval process through the campus so I wanted to run the concept by you for insights. It seems straightforward to me. What do you think?

We'll keep you in the loop with documents and item drafts. —Judy

Judy Lehr, Executive Director
Donor Research & Relations
Director of Operations and Secretary, UCR Foundation
Office of Development
257A Highlander Hall
University of California
Riverside, CA 92521
951-827-2295 judy.lehr@ucr.edu
Holly Preble

From: Holly Preble [hollyp@ucr.edu]  
Sent: Friday, December 17, 2010 12:49 PM  
To: holly.preble@ucr.edu  
Subject: Urban Entomology Endowed Research Fund

Subject: Re: chair

Date: Mon, 29 Mar 2010 10:17:28 -0800
From: Michael K. Rust <michael.rust@ucr.edu>
To: Holly Preble <holly.preble@ucr.edu>

Holly:

The Urban Entomology Endowed Research Fund was established in the Foundation Office with our first $25,000 gift from Dow Chemical. I have not transferred any funds into it. The Foundation should have all the paperwork. The funds were donated to the fund to support urban entomology research under my direction. I have promised no one anything besides that the fund would support urban pest management research. I don't know what the thank you letters look like. They are sent from the foundation.

Over the years, I have been donating my honorariums and consulting funds into the account. I am probably the single largest donor. Only until very recently have any of the interest actually been spent on research. It had been going back into the account. Target Specialty Products has helped conduct fund raisers and donated excess funds from our Fumigation conferences over the years. They have collected smaller donations from pest control operators and then sent a check to the foundation. They have actually provided very few dollars themselves. Consequently, I don't think it is necessary to get an approval from them.

Mike
Subject: possible Urban Entomology Term Chair
From: "June Smith" <June.Smith@ucop.edu>
Date: Thu, 25 Mar 2010 09:06:56 -0700
To: "Judy Lehr" <judy.lehr@ucr.edu>

First, I would like to see typical gift correspondence or, short of that, a handful of agreements for the related gifts. Perhaps there was even a template that was used for the gift agreements. What did the faculty member promise in solicitation and acknowledgment letters? What did donors require in the letters of gift? Once we know those things, we will have a clearer picture.

June

June B. Smith  
Director  
Development Policy and Administration  
University of California  
1111 Franklin Street, 7203  
Oakland, California 94607  
(V) 510.987.9180  
(F) 510.987.9181
What is it and why is it needed?

It is a perpetual urban Entomology research endowment. Your contribution will work forever. Your tax-deductible donation is kept as a special fund managed by the University. Interest from the fund provides a base of funding that supports applied research to control such pests as termites, ants, cockroaches, yellow jackets, fleas, and others. The more money in the fund, the greater the base. The idea of an endowment is something started a few years ago at UCR in response to a downturn in the economy that resulted in a significant decline in manufacturers' and PCOs' ability to support Urban Entomology at UCR. The introduction into California of important pests such as fire ants, Africanized bees, German yellowjackets, and Formosan termites has created an urgent need for additional support and research. We must prepare a legacy for the future. UCR continues to be the leading urban entomology research group in California. You can help.

Where does the money come from?

The money comes from generous people like you. The endowment is supported by a spectrum of people associated with the pest control industry -- manufacturers, distributors, large and small pest control companies, and individuals. Anyone who is a friend of the University and would like to support Urban Entomology research and have it continue at UCR is encouraged to contribute to the research endowment. Many companies and individuals have contributed, and many do so on a regular basis.

What's in it for me?

Everyone associated with the pest control industry will benefit. UCR is one of only a few universities in the country with a research group dealing with urban insect pests. UCR has been helping the pest control industry for more than 35 years. The endowment supports research related to new pest control products, treatment strategies, equipment, education, and rational responses to problems that arise that affect the pest control industry. Remember, contributions are tax-deductible and help support scientific research related to urban pest problems here in California.

What is the goal?

The goal is $1.000,000. That level of endowment will go a long way towards providing UCR's Urban Entomology the research security, independence, and longevity we all hope for. The endowment now has well over $150,000, and continues to increase. We need YOU.

To provide a contribution, please make your check payable to UC Riverside Foundation with "UCR Urban Entomology Endowment" on the notation line.
The University of California, Riverside (UCR) created an Urban Entomology Endowed Research Fund in 1996 to be used for research and outreach on pest problems specifically associated with structural pest control. The goal for the Fund is $1,000,000 and the interest earned will provide a permanent basic level of support for research and outreach that will benefit California residents and the pest control industry.

Background

Urban Entomology and pest control impacts millions of individuals. More than 95% of Californians now living in urban areas are increasingly affected by insect pests that affect their homes, health, and quality of life. There has been a 50-year history of productivity, independent research from entomologists at UCLA and now at UC Riverside to solve these pest problems. Since 1975, when the Urban Entomology program was transferred from UCLA, UCR has continued a tradition of pioneering research.

Benefiting the public and the structural pest control industry, this research generates models and solutions for millions of people in California and throughout the world. Research at UCR has focused on the most effective strategies for dealing with insects in and around homes, apartments, commercial settings, and recreational areas. Increasing concern about insect resistance to pesticides, human exposure to pesticides, professional training and the effects of new and damaging pests introduced from abroad suggest that UCR must continue its leadership role in conducting the research and outreach programs that will address issues and problems arising in urban communities in California.

Research Accomplishments at UC Riverside

As the only major urban entomology program in the western United States, UC Riverside has focused its research and extension efforts on the major urban pests of California and the program has consistently provided leadership and practical relevant findings which assist the industry and public:

- Newest control technologies minimizing pesticide exposure.
- The use of inorganic insecticides to control cockroaches, fleas and termites.
- Clarification of details regarding the biology of cat fleas and strategies for controlling them.
- The role of repellants and natural products in controlling important pest ants, cockroaches and termites.
- The use of baits in ant, cockroach and termite control.
2

- Alternative pest control technologies including biologicals, heat, cold and anoxia.

UC Riverside is also known nationally for education and training of entomologists who serve in academic positions throughout the country as well as in research positions in the pest control industry. Currently UCR graduates from Urban Entomology program are on the faculty at Auburn University, Louisiana State University, North Carolina State University, and the University of Florida. Other scientist are employed by the United States Air Force, California Department of Public Health, and the United States Forest Service- termite facility in New Orleans.

Management of the Fund

An Endowed Research Fund will provide a consistent base of funding for research and outreach in Urban Entomology at the University of California at Riverside. The Fund will be managed by the University, and the interest earned from the Endowment will be used annually to directly support research and outreach activities of the Urban Entomology program.

The research activities supported by the Fund will be under the direction of Michael K. Rust, Ph.D., Professor of Entomology and Donald A. Reiersol, Staff Research Associate at UCR. Graduate and post-doctoral students, staff research associates, laboratory assistants and work-study students will also participate in the research supported by the Urban Entomology Research Fund. Contributions to the Fund are tax-deductible.

The Need

Reduced state funding, corporate belt-tightening, governmental cut-backs, business mergers and economic recession affect the amount of support available for research. In particular, University resources available for organized research units have been eliminated. As a supplement to research grants, the Fund will help ensure financial stability, provide support for independent research, and sustain research efforts of importance to Californians.

Benefits

UC Riverside Department of Entomology serves as resource for the public and structural pest control industry, and donors to the Fund will be helping to support practical research related to new products, treatment strategies, education, and response to issues and problems arising in our urban communities.

In addition to its ongoing research, faculty, staff and graduate students in Urban Entomology offer outreach and extension programs and participate in state and national associations. Activities include:

- Classes, seminars, and workshops for the public and pest control industry.
- Annual Urban Pest Management Conference.
- Annual Structural Fumigation School
Training for state and national pest control associations.
- Presentations at scientific and professional meetings.
- Community outreach to schools and governmental agencies.
- Technical information and advice.

Publications Since 1996

**Alternative Pest Control Technologies**


Graduate Student Papers


Metzger, M.E. and M.K. Rust. 2001. Laboratory techniques for rearing fleas


Proceedings Papers From Scientific Meetings


Reeierson, D. A., M. K. Rust, and J. Hampton-Beesley. 1998. Monitoring with sugar water to determine the efficacy of treatments to control Argentine ants, *Linepithema*


Preamble

A dynamic educational institution such as UCR requires simple and transparent procedures for modifying its educational programs. Such procedures, however, do not currently exist for the discontinuance, merging or splitting of programs. In view of this the Executive Council has charged the Committee on Educational Policy and Graduate Council with the creation of such procedures; the present document is the result of this charge.

For the case of undergraduate programs, the proposed regulations are offered as an extension of Senate Bylaw 10 that provides "Procedures for approval of New Undergraduate Curricula and Changes in Undergraduate Curricula" (http://senate.ucr.edu/bylaws/?action=read_bylaws&code=d&section=10).

Whenever curricular changes of the types considered here are envisaged, there is a serious concern that such actions might result in a loss of faculty lines, or even the termination of employed tenured faculty. Though this possibility cannot be forbidden by the Senate\(^1\), the procedures below are designed to allow as through a discussion as possible, paying particular attention to insuring that all affected faculty will have a voice in the actions being considered. It is to be hoped that any negative effects on the faculty body can be prevented in this consultative process.

When a program is merged, split or disestablished it is also assumed that the reassignment of teaching duties will be handled by the department(s) involved and, if need be, the corresponding dean(s). The process also allows for the Committee on Faculty Welfare to become involved whenever pertinent.

Introduction

Any member of the Academic Senate can propose the merger of two or more majors into a new one, the splitting of an existing major into one or more new ones, or the discontinuance of an existing major.

Such a proposal must contain evidence that the proposed action was fully discussed with all the faculty participating in the program(s) being affected, and will be first reviewed by the executive Committee(s) of the college(s)/school(s) housing the affected program(s). This (these) committee(s) will evaluate the merits of the proposal and will determine whether the proposed changes will (i) result in a reduction of the academic and/or research opportunities for students, or (ii) whether the changes amount to a reorganization of teaching and research programs and opportunities.

Actions of the first type will be referred as disestablishment of the program; actions of the second type will be referred to as program mergers or splits (respectively).

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\(^1\) The regulations are notoriously vague when presenting the conditions under which tenured faculty might be dismissed from the University, except in case of incompetence – as described in the Academic Personnel manual APM-075 (http://www.ucop.edu/acadadv/acadpers/apm/apm-075.pdf). The only guideline is contained in the Regent’s Standing Order 103.9 (http://www.universityofcalifornia.edu/regents/bylaws/so1039.html), repeated in the Academic Personnel Manual APM – 130 – 0 a. (http://www.ucop.edu/acadadv/acadpers/apm/apm-130.pdf), that states “... The termination of a continuous tenure appointment or the termination of the appointment of any other member of the faculty before the expiration of the appointee’s contract shall be only for good cause, after the opportunity for a hearing before the properly constituted advisory committee of the Academic Senate, except as otherwise provided in a Memorandum of Understanding for faculty who are not members of the Academic Senate.”
No programs or units shall be disestablished merged or split until the enrolled students can be accommodated in a fashion that will assure completion of the degree. Arrangements shall be made for the orderly and appropriate accommodations of academic and staff employees whose positions are affected by a decision to disestablish, merge or split programs. These arrangements shall be in accordance with existing personnel policies to the extent that they are adequate for each specific case; where existing policies are not adequate, supplemental policies shall be developed by the Administration in consultation with the Senate whenever appropriate. Until such policies are adopted, historical precedent and established practice shall supplement existing personnel policies. Under no circumstances shall a program be disestablished, merged or split without the full approval of the academic Senate thought the processes described below.

The approval processes of proposals for disestablishment are detailed in item A below; the corresponding process for program mergers or splits is described in item B.

A. Disestablishment of programs

The termination of a line of instruction is to be implemented only after the proposal undergoes both an internal (steps 1-4 below) and external (steps 6-8) reviews.

1. The request for disestablishment should be first considered by the relevant College/School Executive Committee(s) irrespective of the originator of the request. This request must contain clear evidence that the proposed action was discussed with all the faculty members involved in the affected program(s), and that a consensus in favor of the action had been reached by that body. The documentation may also involve minority or individual opinions that modify or go counter to the request. The executive committee(s) shall be also diligent in eliciting comments from the participants in any other affected department(s)/program(s).

2. If approved by the College/School Executive Committees the proposal shall be forwarded to the Committee on Educational Policy (CEP) for undergraduate programs, or to the Graduate Council (GC) for graduate programs. This proposal should include supporting documentation form all the affected departments and programs.

3. The CEP or GC will review of the proposal. These committees may elicit comments from any committee whose charge might overlap with the proposed actions; this may include consultation between CEP and GC if either of these committees deems it necessary. CEP or GC may also request comments from the deans of the colleges/schools affected, but neither CEP nor GC shall delegate approval or review authority to these parties or any other administrative unit.

4. If approved by the GC or CEP the proposal shall be forwarded to the chair of the Division to circulate to the relevant Senate Committees, and to solicit advice from any committee whose comments might inform the eventual decision of the Division. Once this consultative process is concluded the internal part of the review is considered closed.

5. The Executive Council, in consultation with the College/School Executive Committee(s) and the affected programs, shall convene a Special External Review Panel, consisting of individuals from other campuses or institutions. The Charge for this panel shall be drafted by the CEP or GC for undergraduate or
graduate programs. Upon receipt of the Panel charge the Executive Council shall determine the details of the visit (including the length of the review and the honoraria for the panel participants) in consultation with the Graduate Dean for graduate programs or the Vice Provost for Undergraduate Education for undergraduate programs. The Executive Council will convene the External Review Panel as soon as possible, but within a period not to exceed 2 regular quarters.

6. The report of the Special External Review Panel will be forwarded to the CEP or GC for undergraduate or graduate programs. These committees shall review the reports and forward copies to (i) the Chair of the Division for distribution to the relevant Senate committees, (ii) the program(s) affected, and (iii) the Graduate Dean (for graduate programs) or the VPUE (for undergraduate program), eliciting comments from all these parties. The CEP or GC may also request comments from the VC/P and/or the Chancellor.

7. The CEP (for undergraduate programs) or the GC (for graduate programs), upon receipt of the comments from the involved parties will daft a final recommendation that will be forwarded to the Chair of the Division requesting final comments. As a result of these further review by CEP or GC might be necessary. Upon final approval from GC or CEP the proposal shall be forwarded to the Chair of the Division for a vote at the next meeting of the Division; notifications to the Graduate Dean or VPUE, the VC/P and the Chancellor will also be issued. The Division agenda shall include the full documentary evidence followed in the above process.

8. After completion of the foregoing procedures, the results shall be reported by the Division to the Chancellor. If the decision is to transfer, consolidate, disestablish, or discontinue a program, it shall be reported to the System-wide Administration.

9. The campus will report any transfers, consolidations and discontinuances annually on its Academic Program Inventory.

**B. Program mergers or splits**

1. The request for program merger or splits shall be first examined by the appropriate College/School Executive Committee(s). This request must contain clear evidence that the proposed action was discussed with all the faculty members involved in the affected program(s), and that a consensus in favor of the action had been reached by that body. The documentation may also involve minority or individual opinions that modify or go counter to the request. The executive committee(s) shall be also diligent in eliciting comments from the participants in any other affected department(s)/program(s).

2. The college/school Executive Committee(s) will determine whether the proposed changes are meritorious, and determine the associated educational and research advantages. If approved, the proposal, together with the supporting documentation form the College(s) will be forwarded to the Committee on Educational Policy (CEP) for undergraduate programs or to the Graduate Council (GC) for graduate programs, or to both of these committees for mixed programs, and to the Planning and Budget Committee (P&B) for a thorough examination. In particular, the CEP and/or GC will provide an independent evaluation of whether the proposed changes constitute a reorganization that will
result in no diminution of the educational and research opportunities for the students. P&B will provide an independent assessment of the resource implications of the proposal.

3. Either P&B or CEP/GC can request additional clarification from the College/School Executive Committee(s) and/or form the program(s) affected; this evaluation process will not last longer than 2 (two) regular academic quarters. In case the proposal is found to require additional resources, P&B and/or CEP/GC may request the College(s)/School(s) obtain commitments from the Deans as a condition for approval.

4. If approved by CEP/GC and P&B the proposal together with all supporting documentation will be forwarded to the Chair of the Division to circulate to the relevant Senate Committees, and to solicit advice from any committee whose comments might inform the eventual decision of the Division; this consultation shall not take longer than one academic quarter. Comments and recommendations from other committees shall be forwarded to the CEP/GC for a final recommendation.

5. If approved by CEP/GC the proposal shall be forwarded to the Chair of the Division for a vote at the next meeting of the Division; notifications to the Graduate Dean or VPU, the VC/P and the Chancellor will also be issued. The Division agenda shall include the full documentary evidence followed in the above process.

6. After completion of the foregoing procedures, the results shall be reported by the Division to the Chancellor. If the decision is to transfer, consolidate, disestablish, or discontinue a program, it shall be reported to the System-wide Administration.

7. The campus will report any transfers, consolidations and discontinuances annually on its Academic Program Inventory.
**Points to clarify**

The original language states that the disestablishment of a *program* rests with the senate while that of a *unit* rests with the chancellor. Need to
- Find the definitions of program and unit and see whether they do match this
- Determine whether the stated powers are in fact in the regulations

The types of actions describe involve no personnel actions and the types of resources involved are connected only with the educational mission; there are, however, gray areas. For example,
- If a program is disestablished and this program had a dedicated student affairs officer, what happens to that position?
- If a faculty member has been a long-time participant in a program to be disestablished how will this reflect on his/her future merit and promotion actions